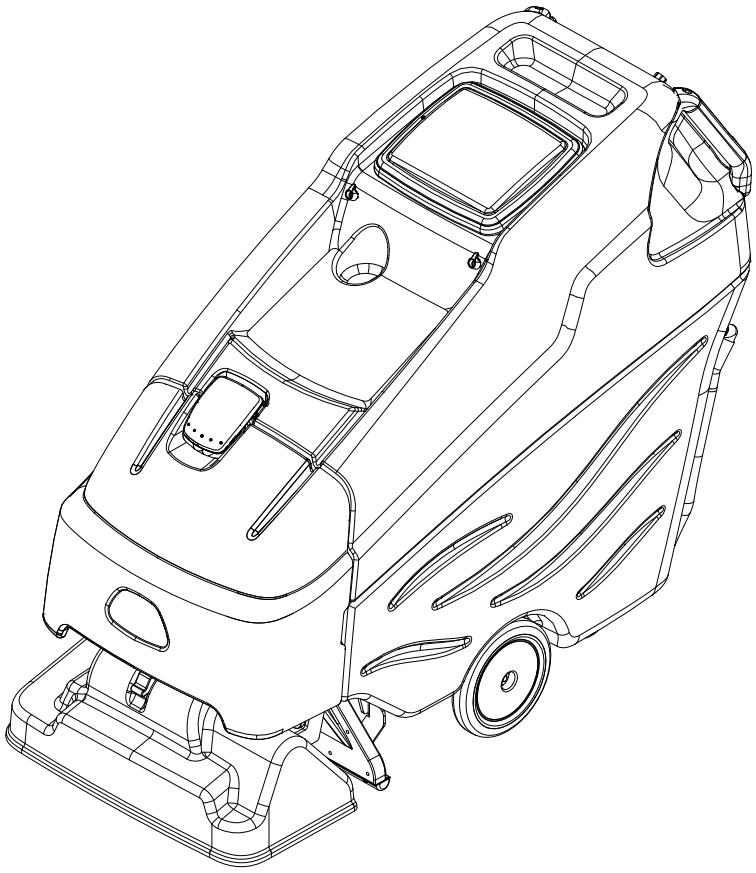
Commodore Duo

WINDSOR
Kärcher Group

Carpet Extractor



Operating Instructions (ENG)

MODELS:

COMDU
10086120

COMXDU
10086140

COMDUX
10086160

COMXDUX
10086180

From Serial Number (Ref No. 1*)
* See Serial Number page or call manufacturer.

86400200-A 03/09/15

Model: _____

Date of Purchase: _____

Serial Number: _____

Dealer: _____

Address: _____

Phone Number: _____

Sales Representative: _____

Overview

The Commodore Duo is a battery powered carpet extractor intended for commercial use. The Commodore Duo applies a cleaning solution onto a carpeted floor, sweeps and scrubs the carpet with two counter-rotating brushes and then vacuums the soiled water back into the recovery tank.

Warranty Registration

Thank you for purchasing a Kärcher North America product. Warranty registration is quick and easy. Your registration will allow us to serve you better over the lifetime of the product.

To register your product go to :
http://warranty.karcherna.com/
For customer assistance:
1-800-444-7654

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This manual contains the following sections:

- How to Use This Manual
- Safety
- Operations
- Maintenance
- Suggested Spare Parts List

The HOW TO USE THIS MANUAL section will tell you how to find important information for ordering correct repair parts.

Parts may be ordered from authorized dealers. When placing an order for parts, the machine model and machine serial number are important. Refer to the MACHINE DATA box which is filled out during the installation of your machine. The MACHINE DATA box is located on the inside of the front cover of this manual.

Model: _____

Date of Purchase: _____

Serial Number: _____

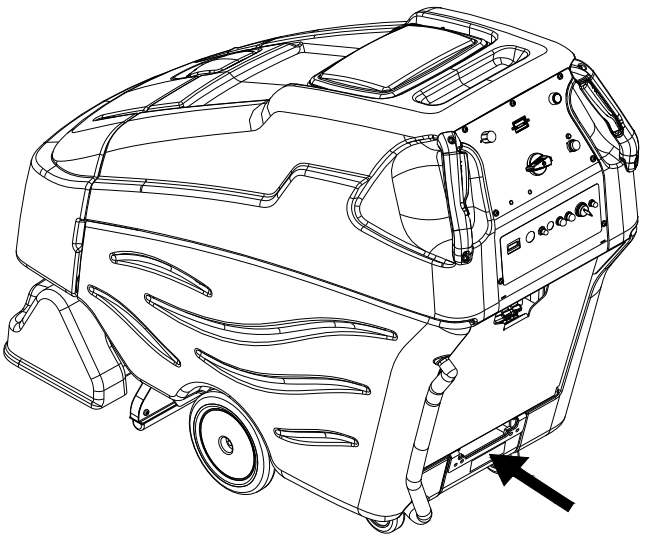
Dealer: _____

Address: _____

Phone Number: _____

Sales Representative: _____

The model and serial number of your machine is located on the back of the machine.



The SAFETY section contains important information regarding hazardous or unsafe practices of the machine. Levels of hazards are identified that could result in product damage, personal injury, or severe injury resulting in death.

The OPERATIONS section is to familiarize the operator with the operation and function of the machine.

The MAINTENANCE section contains preventive maintenance to keep the machine and its components in good working condition. They are listed in this general order:

- Batteries
- Scrub Brushes
- Service Schedule
- Machine Troubleshooting

NOTE: The manual part number is located on the lower right corner of the front cover.

IMPORTANT SAFETY INSTRUCTIONS

When using this machine, basic precaution must always be followed, including the following:

READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE.

⚠WARNING: To reduce the risk of fire, electric shock, or injury:

Use only indoors. Do not use outdoors or expose to rain.

Use only as described in this manual. Use only manufacturer's recommended components and attachments.

If the machine is not working properly, has been dropped, damaged, left outdoors, or dropped into water, return it to an authorized service center.

Do not operate the machine with any openings blocked. Keep openings free of debris that may reduce airflow.

This machine is not suitable for picking up hazardous dust.

Machine can cause a fire when operating near flammable vapors or materials. Do not operate this machine near flammable fluids, dust or vapors.

This machine is suitable for commercial use, for example in hotels, schools, hospitals, factories, shops and offices for more than normal housekeeping purposes.

Maintenance and repairs must be done by qualified personnel.

If foam or liquid comes out of machine, switch off immediately.

Disconnect battery before cleaning or servicing.

Before the machine is discarded, the batteries must be removed and properly disposed of.

Make sure all warning and caution labels are legible and properly attached to the machine.

During operation, attention shall be paid to other persons, especially children.

Before use all covers and doors shall be put in the positions specified in the instructions.

When leaving unattended, secure against unintentional movement.

The machine shall only be operated by instructed and authorized persons.

When leaving unattended, switch off or lock the main power switch to prevent unauthorized use.

Only chemicals recommended by the manufacturer shall be used.

This appliance has been designed for use with the brushes specified by the manufacturer. The fitting of other brushes may affect its safety.

Do not use on surfaces having a gradient of over 2 degrees.

READ AND SAVE THESE INSTRUCTIONS

MESURES DE SÉCURITÉ IMPORTANTES

Lors de l'utilisation d'un appareil à batteries, il est nécessaire de respecter systématiquement des mesures de sécurité de base, comme suit :

PRENEZ NOTE DE TOUTES CES MESURES AVANT D'UTILISER CETTE MACHINE.

⚠ AVERTISSEMENT:

Pour réduire les risques d'incendie, de chocs électriques, ou de blessures :

N'utiliser cette machine qu'en intérieur. Ne jamais l'utiliser à l'extérieur ou dans la pluie.

N'utiliser cette machine que comme décrit dans le présent manuel. N'utiliser que les composants et les accessoires conseillés par le fabricant.

Lorsque la machine ne **fonctionnant pas correctement**, a fait l'objet d'une chute ou d'une détérioration, a été laissée à l'extérieur, est tombée dans l'eau, la retourner au centre de service agréé.

Ne pas opérer la machine lorsque les conduits de ventilation sont bloquées. Débarrasser les débris des conduits, car ils peuvent réduire l'écoulement d'air.

Cette machine **n'est pas** adaptée au ramassage de poussières dangereuses

Cette machine peut provoquer un incendie lorsqu'elle est utilisée près de vapeurs ou de matériaux inflammables. Ne pas l'utiliser près de liquides, de poussières ou de vapeurs inflammables.

Cette machine est destinée à un usage commercial. Elle est recommandée davantage pour les domaines hôtelier, scolaire, hospitalier, industriel ou pour les bureaux, les chaînes de magasin, que pour un usage domestique normal.

L'entretien et les réparations de la machine **doivent être effectuées** par un personnel qualifié.

Si de la mousse ou du liquide sort de la machine, **la mettre hors tension immédiatement**.

Déconnecter les batteries avant de nettoyer la machine ou de la soumettre à un entretien.

Avant de se débarrasser de la machine, **il est nécessaire de retirer** les batteries et de les jeter correctement.

S'assurer que toutes les plaques d'avertissement ou de précaution **sont lisibles et fixées correctement** sur la machine.

Durant la manoeuvre de la machine, prendre garde aux personnes environnantes et notamment aux enfants.

Avant l'utilisation de la machine, veiller à positionner tous les couvercles et portes comme indiqué dans les instructions.

Lorsque la machine est laissée sans surveillance, s'assurer qu'elle ne se déplace pas de manière accidentelle.

Cette machine ne doit être manoeuvrée que par un personnel expérimenté et qualifié.

Lorsque la machine est laissée sans surveillance, la mettre hors tension ou verrouiller l'interrupteur principal afin d'empêcher un emploi non autorisé.

Seuls les produits chimiques recommandés par le fabricant doivent être utilisés.

Cette machine a été conçue pour être utilisée avec des brosses spécifiées par le fabricant.

L'utilisation d'autres brosses peut affecter sa sûreté.

N'employez pas sur des surfaces ayant un gradient de plus de 2 degrés.

Hazard Intensity Level

The following symbols are used throughout this guide as indicated in their descriptions:

There are three levels of hazard intensity identified by signal words -**WARNING** and **CAUTION** and ***FOR SAFETY***. The level of hazard intensity is determined by the following definitions:

⚠WARNING:

WARNING - Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠CAUTION:

CAUTION - Hazards or unsafe practices which could result in minor personal injury or product or property damage.

FOR SAFETY: To Identify actions which must be followed for safe operation of equipment.
Report machine damage or faulty operation immediately. Do not use the machine if it is not in proper operating condition. Following is information that signals some potentially dangerous conditions to the operator or the equipment. Read this information carefully. Know when these conditions can exist. Locate all safety devices on the machine. Please take the necessary steps to train the machine operating personnel.

FOR SAFETY:
DO NOT OPERATE MACHINE:
Unless Trained and Authorized.
Unless Operation Guide is Read and understood.
In Flammable or Explosive areas.
In areas with possible falling objects

WHEN SERVICING MACHINE:
Avoid moving parts. Do not wear loose clothing; jackets, shirts, or sleeves when working on the machine. Use manufacturer approved replacement parts.

⚠WARNING:

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep solution tank in raised position when charging. Keep sparks and flames away from the batteries. Do not smoke around batteries.

⚠WARNING:

Disconnect batteries before working on machine. Only qualified personnel should work inside machine. Always wear eye protection and protective clothing when working on or near batteries. Avoid skin contact with the acid contained in the batteries.

⚠WARNING:

Never allow metal to lie across battery tops.

Les symboles ci-dessous sont utilisés à travers ce manuel comme illustré dans leurs descriptions :

DEGRÉS DE RISQUES EN CAS DE DANGER

Il existe trois degrés de risques identifiés par les termes signalétiques –**AVERTISSEMENT** et **ATTENTION** et ***POUR VOTRE SÉCURITÉ.*** Le degré de risque est défini de la manière suivante:

⚠ AVERTISSEMENT:

AVERTISSEMENT - Dangers ou méthodes dangereuses qui POURRAIENT provoquer de graves blessures ou entraîner la mort.

⚠ ATTENTION:

ATTENTION - Dangers ou méthodes dangereuses qui pourraient provoquer des blessures légères ou une détérioration du produit ou des biens immobiliers.

POUR VOTRE SÉCURITÉ: ce signe permet d'identifier les mesures de précaution à prendre pour assurer un bon fonctionnement du matériel.

Rendre compte immédiatement d'une défaillance ou d'une détérioration de la machine. Ne pas utiliser la machine si celle-ci ne fonctionne pas correctement. Lire soigneusement les informations ci-dessous signalant certains dangers potentiels pour l'opérateur de la machine. L'opérateur doit être absolument au courant de ces dangers potentiels. Localiser tous les dispositifs de sécurité sur la machine. Il est conseillé de prendre les mesures nécessaires pour former le personnel opérateur.

POUR VOTRE SÉCURITÉ:

NE PAS MANOEUVRER LA MACHINE:
Lorsqu'on n'est pas expérimenté ou qualifié.
Lorsque le guide d'utilisation n'est pas été lu ou compris.
Dans des zones inflammables ou explosives.
Dans des zones où des objets peuvent tomber.

LORS DE L'ENTRETIEN DE LA MACHINE:

Éviter les parties amovibles. Ne pas porter de vêtements amples, tels que des vestes, des chemises ou des vêtements avec manches lors de l'utilisation de la machine. Utiliser les pièces détachées Windsor homologuées.

⚠ AVERTISSEMENT:

Les batteries émettent le gaz d'hydrogène. L'explosion ou le feu peut résulter. Étincelles de subsistance et flamme nue loin. Compartiment de batterie de subsistance ouvert en chargeant. Étincelles et flammes de subsistance loin des batteries. Ne fumez pas autour des batteries.

⚠ AVERTISSEMENT:

Déconnecter les batteries avant de travailler sur la machine. La machine ne doit être confiée qu'à un personnel qualifié. Porter systématiquement des lunettes et des vêtements de protection lors d'une intervention sur les batteries ou aux alentours. Éviter tout contact de la peau avec l'acide contenu dans les batteries.

⚠ AVERTISSEMENT:

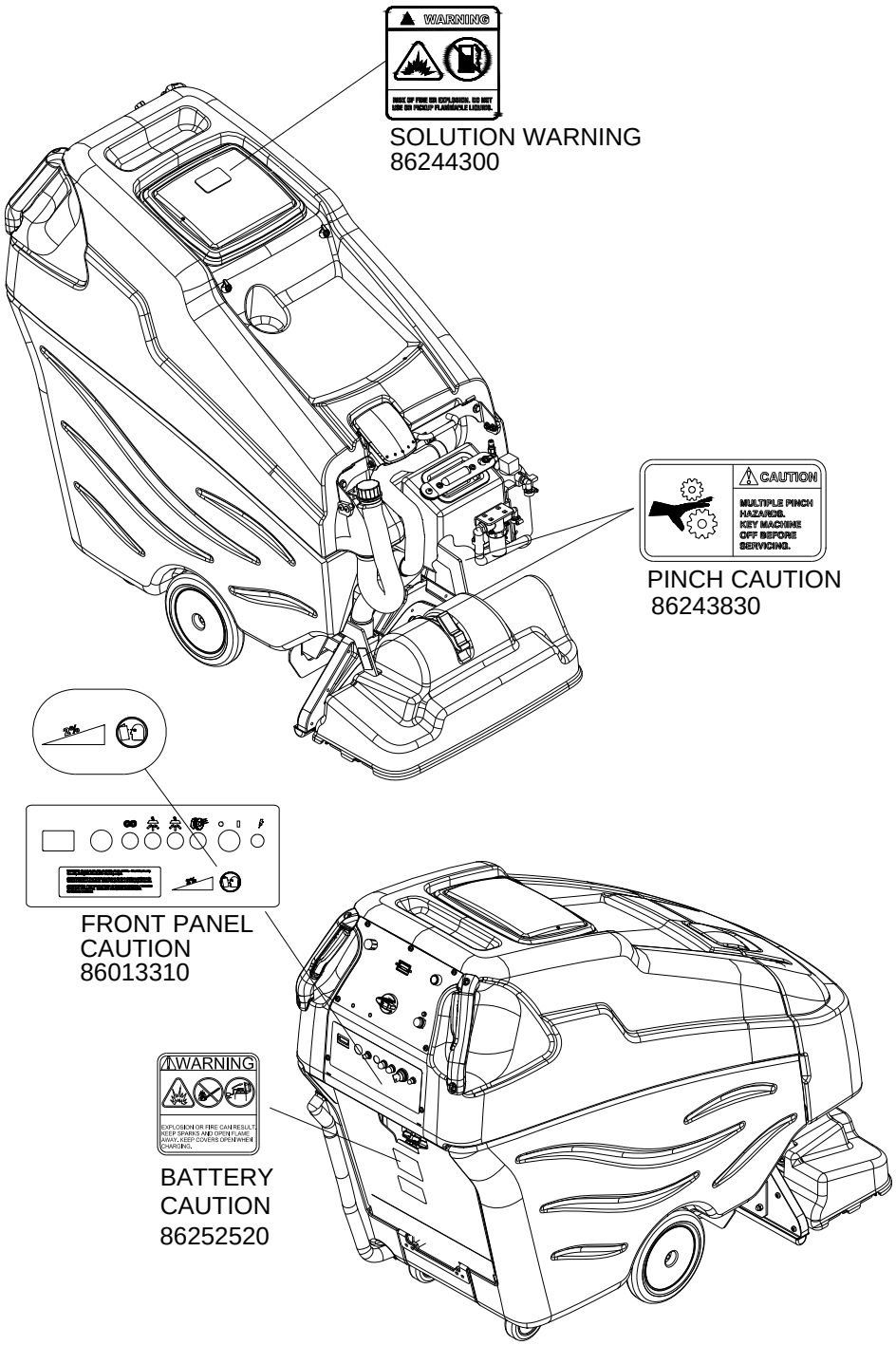
Ne jamais placer d'objets métalliques sur le dessus des batteries.

Safety Labels

These drawings indicate the location of safety labels on the machine. If at any time the labels become illegible, promptly replace them.

EMPLACEMENT DE L'ÉTIQUETTE DE SÉCURITÉ

REMARQUE : Ces dessins indiquent l'emplacement des étiquettes de sécurité sur la machine. Si, à tout moment, les étiquettes deviennent illisibles, contactez votre représentant autorisé pour un remplacement rapid



Technical Specifications - Basic

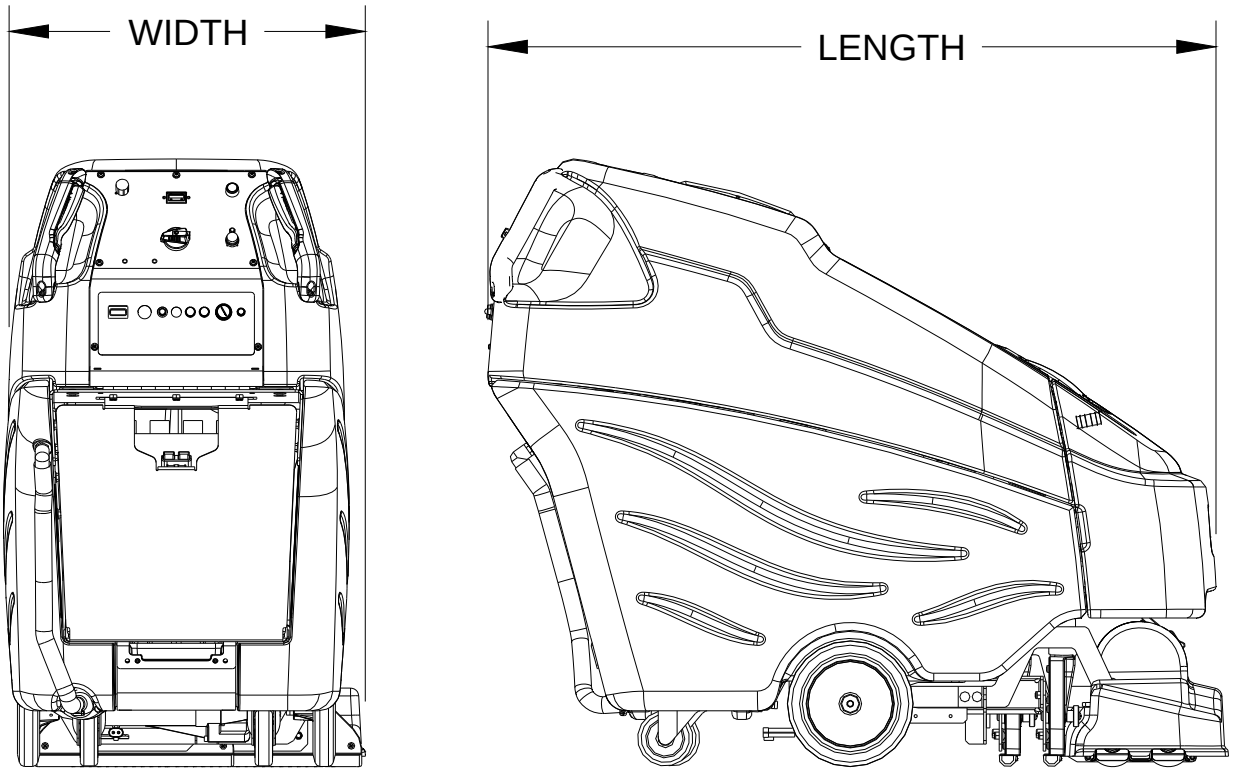
ITEM	DIMENSION/CAPACITY
Nominal Power	1260 W
Rated Voltage	36 Volts DC
Rated Amperage	35 amps
Batteries	3 X12 Volt 130-195-215 AH @ 20 hr. rate
Battery Compartment Dimensions	23.5 in. x 15.5 in. x 16.5 in. tall (600 mm x 400 mm x 420 mm)
Propelling Motor	.5 HP (373 W)
Mass (GVW)	889 lbs (403 kg)
Weight Empty Without Batteries	340 lbs (154 kg)
Solution Control	Metered flow with automatic shut-off in neutral and reverse
Spray Pump Pressure	100 psi (688 Kpa)
Solution Capacity	19.4 gal (74 Liter)
Spray Jets - Interim	2 Jets with total flow of 0.24 gal/min (0.9 Liter/min)
Spray Jets - Extraction	2 Jets with total flow of 1.05 gal/min (4.0 Liter/min)
Recovery Capacity	17.5 gal (66 Liter)
Vacuum Motors	1 x .75 Hp (560 W)
Scrub Brush Diameter	3.38” Inch (85.5 mm)
Scrub Brush Motor	1 x .5 Hp (375 W)
Scrub Brush Pressure	Floating
Scrub Brush Speed	1084 rpm
Tires	9 in. (228mm) Solid Gray non-marking
Foundation Pressure	503 psi (3.5 Mpa)
Maximum (Transport) Speed	Propel = 252 Ft/min (4.6 Km/hr)
Scrubbing Speed	Interim = 110 Ft/min (2.0 Km/hr) Extract = 55 Ft/min (1.0 Km/hr
Frame Construction	Powder coated steel
Minimum Aisle U-Turn Width	56 in. (1.4 Meter)
Maximum Rated Climb And Descent Angle	6 degrees

Technical Specifications- Deluxe

ITEM	DIMENSION/CAPACITY
Nominal Power	1926 W
Rated Voltage	36 Volts DC
Rated Amperage	54 amps
Batteries	3 X12 Volt 195-215 AH @ 20 hr. rate
Battery Compartment Dimensions	23.5 in. x 15.5 in. x 16.5 in. tall (600 mm x 400 mm x 420 mm)
Propelling Motor	.5 HP (373 W)
Mass (GVW)	928 lbs (421 kg)
Weight Empty Without Batteries	379 lbs (172 kg)
Solution Control	Metered flow with automatic shut-off in neutral and 0:1reverse
Spray Pump Pressure	100 psi (688 Kpa)
Solution Capacity	19.4 gal (74 Liter)
Spray Jets - Interim	2 Jets with total flow of 0.24 gal/min (0.9 Liter/min)
Spray Jets - Extraction	4 Jets with total flow of 1.05 gal/min (4.0 Liter/min)
Recovery Capacity	17.5 gal (66 Liter)
Vacuum Motors	2 x .75 Hp (560 W)
Scrub Brush Diameter	3.38” Inch (85.5 mm)
Scrub Brush Motor	1 x .5 Hp (375 W)
Scrub Brush Pressure	Floating
Scrub Brush Speed	1084 rpm
Tires	9 in. (228mm) Solid Gray non-marking
Foundation Pressure	503 psi (3.5 Mpa)
Maximum (Transport) Speed	Propel = 252 Ft/min (4.6 Km/hr)
Scrubbing Speed	Interim = 110 Ft/min (2.0 Km/hr) Extract = 55 Ft/min (1.0 Km/hr)
Frame Construction	Powder coated steel
Minimum Aisle U-Turn Width	56 in. (1.4 Meter)
Maximum Rated Climb And Descent Angle	6 degrees
Chemical Tank “A” Capacity	1.24 Gal (4.62L)
Chemical Tank “B” Capacity	0.33 Gal (1.24L)
Chemical “A” Mix Ratio	16:1 Nominal
Chemical “B” Mix Ratio	64:1 Nominal

Technical Specifications

ITEM	MEASURE
Height	43 inches (1100 mm)
Length	54 inches (1400 mm)
Width	27 inches (700 mm)
Width of scrub path	20 inches (500mm)



SPECIAL NOTES:

The sound pressure level at the operator's ear was measured to be 69.5dBA. This was a near field, broadband measurement taken in a typical industrial environment on a tile floor. This appliance contains no possible source of impact noise. The instantaneous sound pressure level is below 63 Pa. The weighted root mean square acceleration at the operator's arms was measured to be below 2.5m/s2. This was a tri-axial, third-octave-band measurement made during normal operation on a composite tile floor. The measurement and related calculations were made in accordance with ANSI S3.34-1986.

⚠CAUTION:

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

⚠ AVERTISSEMENT:

Cet appareil n'est pas prévu à l'usage des personnes (enfants y compris) avec des possibilités physiques, sensorielles ou mentales réduites, ou le manque d'expérience et de connaissance, à moins qu'ils aient été donnés la surveillance ou l'instruction au sujet de l'utilisation de l'appareil par une personne chargée de leur sûreté. Des enfants devraient être dirigés pour s'assurer qu'ils ne jouent pas avec l'appareil.

How This Machine Works

The Machine is a battery powered, self-propelled Carpet Maintainer and Carpet Extractor intended for commercial use.

The machine is designed to maintain your carpet using the Encapsulating Interim Carpet Cleaning Process. By using the Interim Carpet Maintainer in conjunction with Windsor Red Carpet Encapsulating Interim Cleaning (W450-4) or Encapsulating Interim Cleaning with Carpet Protection (W455-4) chemical solution, you can perform a regular light cleaning and grooming of your carpet very quickly, and have the carpet dry and ready for traffic within 30 minutes.

The machine is also designed to restore your carpet using carpet extraction chemicals. The machine is designed to apply cleaning solution onto carpeted floor, scrub the carpet with two counter-rotating brushes, then vacuum the soiled water back into the recovery tank.

Deluxe Only

The machine can be used to perform a "One step" or "Two step" carpet restoration. Using the "One step" process, the carpet is restored with a deep extraction chemical. Using the "Two step" process, the carpet is first scrubbed with a pre-spray and then scrubbed again with a neutralizing rinse.

The machine's primary systems are the solution system, chemical injection system (Deluxe), scrub system, recovery system and operator control system.

The function of the solution system is to store water and deliver solution to the appropriate spray jets. The solution system consist of the solution tank, strainer, pump, solenoid valves, spray jets and controls. The solution tank stores water until it is delivered through the strainer and pump to the solenoid valves and spray jets. The strainer protects the pump from debris. The solenoid valves automatically prevents solution flow unless the scrub brushes are turned on and the machine is being propelled forward. The solution pump switch controls the cleaning solution flow.

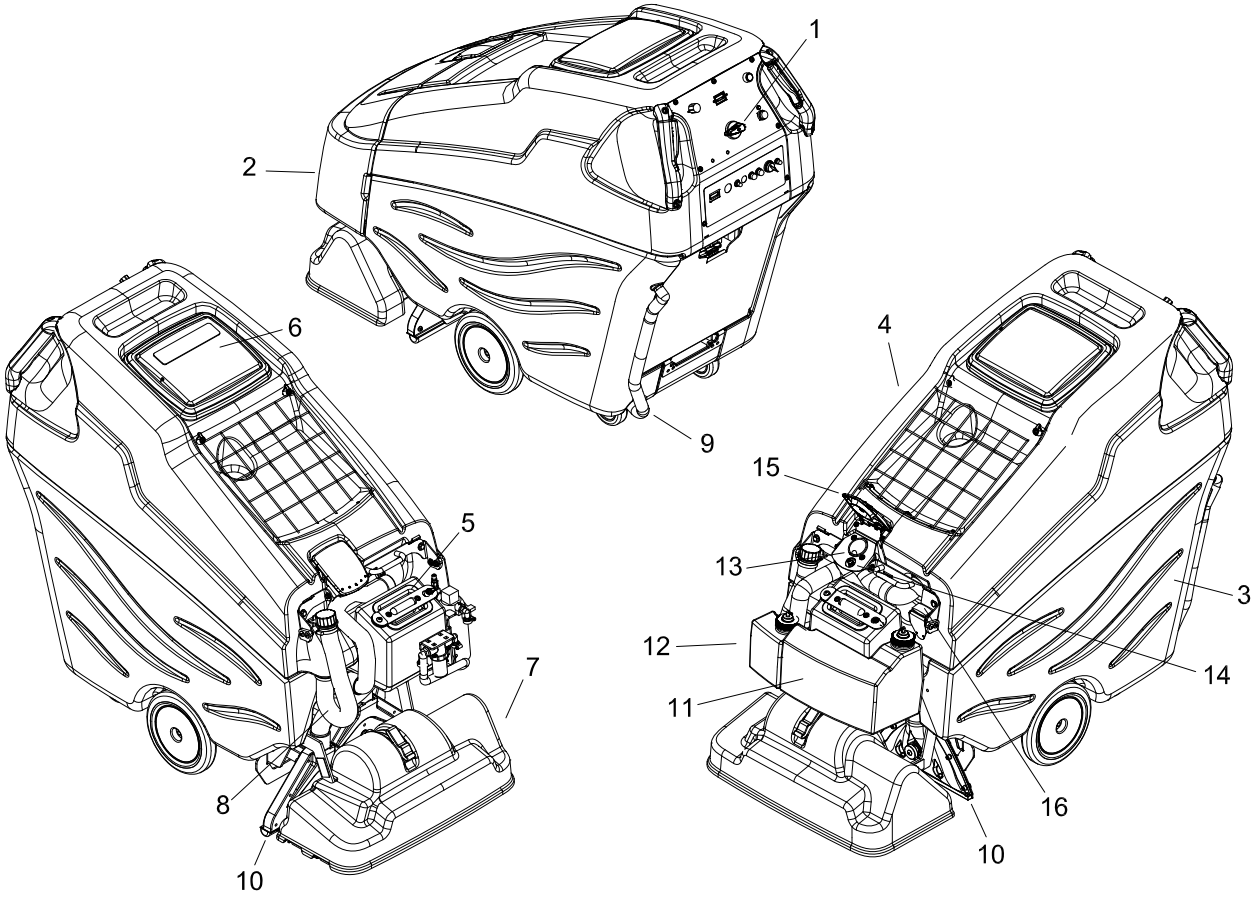
Deluxe Only

The function of the chemical injection system is to deliver the appropriate chemical into the solution system to be applied to the carpet. The chemical injection system consists of the "A" chemical tank, "B" chemical tank, chemical selector valve, chemical pump, and the mixing sector. The "A" chemical tank stores either encapsulating interim chemical, pre-spray "Two step" chemical or neutralizing rinse, "Two step" chemical. The "B" chemical tank stores the deep extraction chemical. The chemical selector valve controls which chemical is delivered into the system depending on the function knob on the control panel. The chemical pump draws from the tanks and delivers it into the solution system. The mixing sector allows the chemical to thoroughly mix with the water before being delivered to the carpet.

The function of the scrub system is to scrub the carpet, mix the cleaning solution with the soil and lift and groom the carpet pile. The scrub system consist of two cylindrical brushes, motor, lift actuator, and controls. The brushes scrub the carpet as the motor drives the brushes. The counter-rotating action of the brushes groom the carpet pile. The rotor actuator switch controls the lift actuator and brush motor to lower the deck and turn the motor on, or raise the deck and turn the motor off. The brush motor will automatically turn off when the throttle switches are in neutral.

The function of the recovery system is to vacuum the soiled water back into the recovery tank. The recovery system consists of the vacuum shoes, vacuum motor(s), float ball filter, recovery tank and controls. The vacuum shoes extract the dirty solution from the carpet as the machine moves forward. The vacuum motor(s) provide suction to draw the dirty solution off the floor and into the recovery tank. The float ball filter protects the vacuum fan from debris and foam. The recovery tank stores the dirty solution.

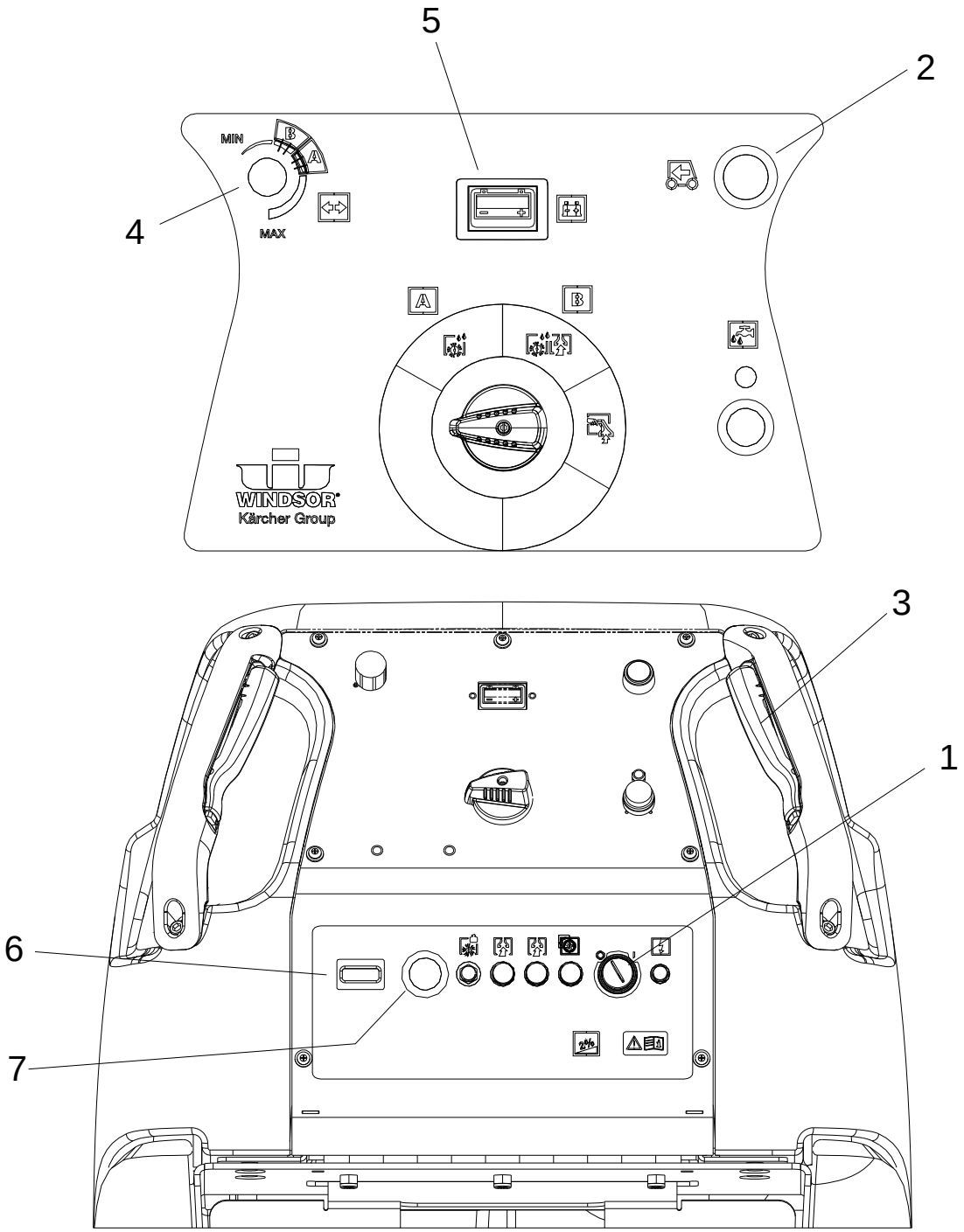
The function of the operator control system is to control the direction and speed of the machine. The control system consists of the reverse switch, throttle switch, speed control knob, propel controller, and drive wheels. The reverse switch signals forward or reverse direction. The propel controller interprets signals from the throttle switches, and speed control knob to command the drive wheels to propel or slow the machine.



BASIC DELUXE

Components

1. Control Panel-Drive/Scrub
2. Front Cover
3. Solution Tank
4. Recovery Tank
5. Solution Fill Cover
6. Recovery Dome
7. Scrub Deck
8. Recovery Drain Hose
9. Solution Drain Hose
10. Vacuum Shoes
11. Chemical Tank "A" (Deluxe)
12. Chemical Tank "B" (Deluxe)
13. Accessory Vacuum Port (Deluxe)
14. Accessory Water Port (Deluxe)
15. Accessory Port Cover (Deluxe)
16. Switch, Chemical Prime and flush for "A" and "B" Systems (Deluxe)



Drive Controls

1. Key Switch
2. Reverse Switch
3. Throttle Switches
4. Speed Control Knob
5. Battery Discharge Indicator
6. Hour Meter
7. E-Stop Button (Deluxe)

1. Key Switch

   Controls the power for machine functions.
   To turn the machine power on, rotate key clockwise.
   To turn the machine off, rotate key counterclockwise.

2. Reverse Button

   Controls the direction of travel of the vehicle.
   To travel in reverse, press the button and press either of the throttle switches.
   To travel forward, release the button are press either of the throttle switches.

3. Throttle Switches

   Propel the vehicle with the speed control knob setting selected. Pressing either of the switches causes the machine to travel in the direction selected by the Reverse Button.
   To travel, press either of the throttle switches.
   To stop travel, release both throttle switches.

4. Speed Control Knob

   Controls the speed of the machine. Speed range B is intended for carpet extraction. Speed A is intended for interim carpet cleaning. Faster speeds are recommended for transport only, not scrubbing.
   To increase speed, turn the knob clockwise.
   To decrease speed, turn the knob counter clockwise.
   Speeds can be adjusted at any time, whether machine is moving or not.

5. Battery Discharge Indicator

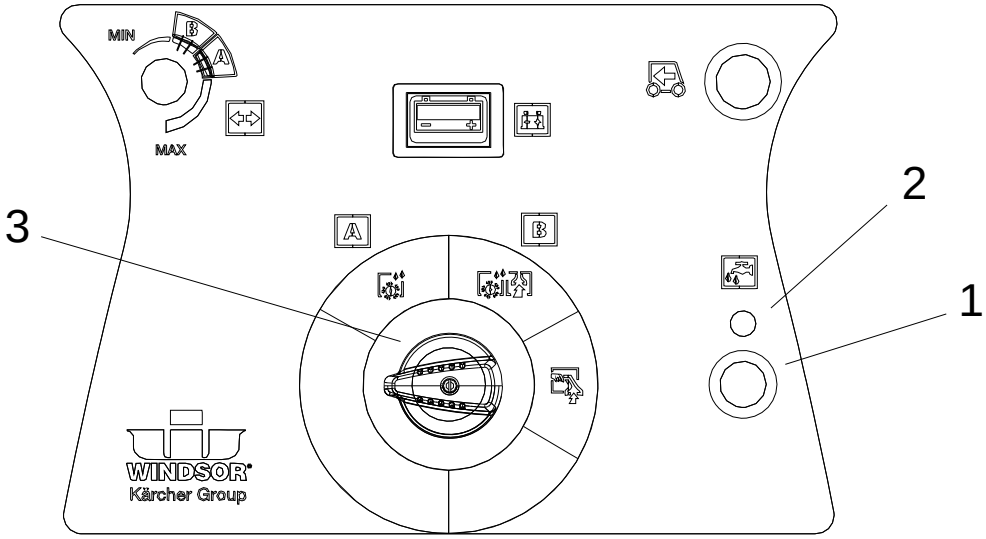
   Indicates the charge level of the batteries.
   The meter display is divided into 10 vertical bars. All bars illuminated indicate full charge. Bars flashing near the left side indicate the batteries should be charged. Further operation of the machine could damage the machine and the batteries. Bars flashing also indicate that machine has been left unattended with key on for more than 15 minutes. Turn key off then on to reset.

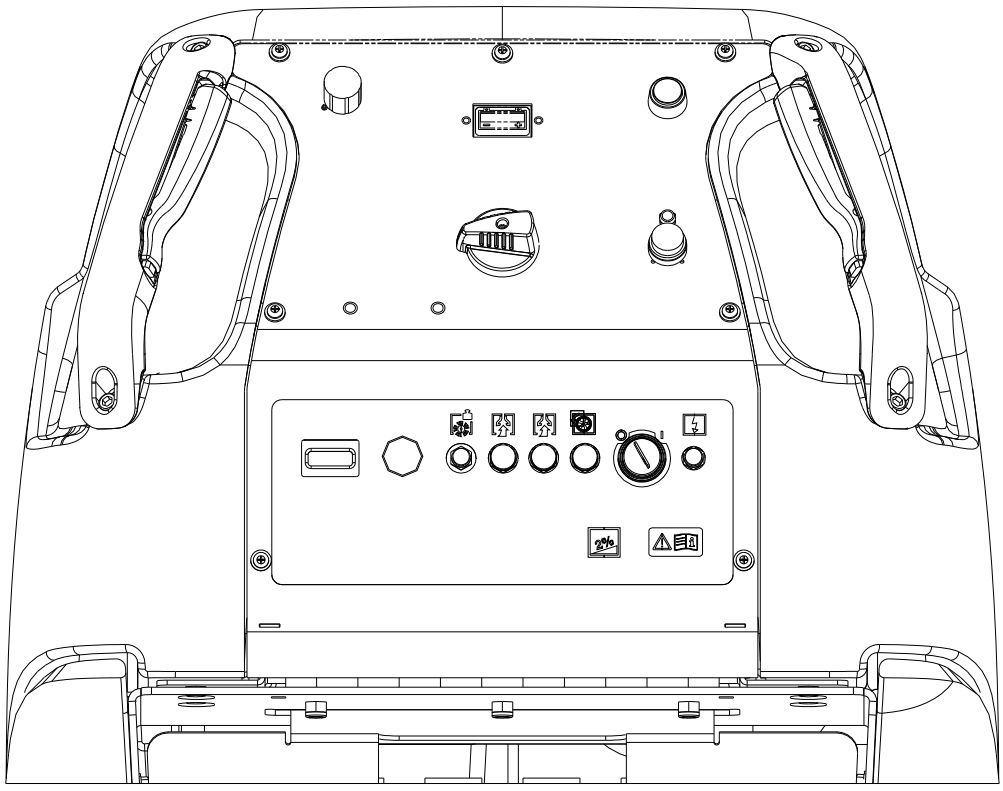
6. Hour Meter

   Records the number of hours the machine has been in operation (scrubbing). This information is useful in determining when to service the machine.

7. Emergency Stop Switch (Deluxe)

   This safety feature is designed to cut all power to the machine at any time.
   To shut the machine power off, push the Emergency Stop Switch.
   To reset the machine, rotate the switch clockwise





Scrub Controls

1. Solution Pump Switch
2. Solution Pump Indicator
3. Function Switch

1. Solution Pump Switch

Controls power to the spray pump.
If the throttle is in neutral, or reverse control button is in reverse position, the flow is automatically interrupted. This feature prevents application of solution without scrubbing it into carpet.

2. Solution Pump Indicator Light

The solution pump indicator light is illuminated green when the pump is on.

3. Scrub Deck Rotary Switch (Basic)

Raises and lowers the scrub deck, and turns the scrub brush motors on and off, and controls the solution solenoids.

For interim or "A" mode, rotate the function knob to the "A" position. The scrub deck will lower and the scrub motor will turn on and the interim solenoid will open and spray will flow through the interim jets. The brush motor will automatically turn off in neutral. The interim solenoid will shut off in neutral or reverse.

To raise the deck, turn off the brush motor and solenoid(s). Rotate the knob to the off position to the far counter clockwise position.

For extraction or "B" mode, rotate the function knob to the "B" position. The scrub deck will lower and the scrub motor will turn on and the extraction solenoid and interim solenoid will open and spray will flow through the extraction and interim jets and the vacuum motor will run. The brush motor will automatically turn off in neutral. The extraction and interim solenoid will shut off in neutral or reverse.

To raise the deck, turn off the brush motor and solenoid(s). Rotate the knob to either the off position to the far counter clockwise position, or rotate the knob to the far clockwise position to the accessory mode so that the vacuum motor continues to run to keep any excess soiled solution from dripping back onto the floor.

To use the machine with an accessory hand tool or wand rotate the knob fully clockwise to the accessory position. Only the vacuum motor and pump will run. Connect the solution hose of the accessory tool to the solution accessory port. The fitting is 1/8" male quick disconnect. If needed to adapt to 1/4" male quick disconnect (see Suggested Spare Parts for part number).

To connect the vacuum hose, disconnect the hose assembly from the lower connection of the "Y" tube junction. Use adapter to join the two hose cuffs together (See Accessories page).

Scrub Deck Rotary Switch (Deluxe)

Raises and lowers the scrub deck, and turns the scrub brush motors on and off, and controls the solution solenoids.

For interim/pre-spray "A" mode, rotate the function knob to the "A" position. The "A" chemical will be drawn from its tank and delivered to the solution system. The scrub deck will lower and the scrub motor will turn on and the interim/pre-spray solenoid will open and spray will flow through the jets. The brush motor will automatically turn off in neutral. The spray solenoid will shut off in neutral or reverse.

To raise the deck, turn off the brush motor and solenoid(s). Rotate the knob to the off position to the far counter clockwise position.

For extraction or "B" mode, rotate the function knob to the "B" position. The "B" chemical will be drawn from its tank and delivered to the solution system. The scrub deck will lower and the scrub motor will turn on and the extraction solenoid and interim/pre-spray solenoid will open and spray will flow through the extraction and interim jets and the vacuum motor will run. The brush motor will automatically turn off in neutral. The extraction and interim/pre-spray solenoid will shut off in neutral or reverse.

To raise the deck, turn off the brush motor and solenoid(s), rotate the knob to either the off position to the far counter clockwise position, or rotate the knob to the far clockwise position to the accessory mode so that the vacuum motor continues to run to keep any excess soiled solution from dripping back onto the floor.

To use the machine with an accessory hand tool or wand, rotate the knob fully clockwise to the accessory position. Only the vacuum motor and pump will run. Connect the solution hose of the accessory tool to the solution accessory port. The fitting is 1/8" male quick disconnect. If needed to adapt to 1/4" male quick disconnect (see Suggested Spare Parts for part number). NOTE: The accessory port is only supplied with water from the solution tank. No chemical is injected.

To connect the vacuum hose, open the accessory port cover and insert the wand vacuum hose fully into the port.

Machine Operation

Pre-Run Machine Inspection

Do a pre-run inspection to find possible problems that could cause poor performance or lost time from break-down. Follow the same procedure each time to avoid missing steps.

NOTE: See maintenance section for pre-run machine inspection checklist items.

Starting Machine

NOTE: Perform pre-run machine check before operating machine.

FOR SAFETY: **Before starting machine, make sure that all safety devices are in place and operating properly.**

1. Turn the machine power on by turning key switch clockwise to the "I" (on) position.
2. Check the position of the Direction Control Button to make sure the machine will travel in the direction intended.
3. Check the position of the speed control knob to make sure the machine will travel at the intended speed.
4. Press either throttle switch.

Emergency Stop Procedures

1. Release both the throttle switches.
2. Turn machine power off with key switch by turning key switch counterclockwise to the "o" (off) position.

Deluxe

1. Release both the throttle switches.
2. Turn machine power off with key switch by turning key switch counterclockwise to the "o" (off) position.
3. Push E-Stop button in.
4. To reset the E-stop button, rotate counter clockwise and the switch will pop back out

Filling Solution Tank

FOR SAFETY: Before leaving or servicing machine; stop on level surface, turn off machine and remove key.

1. Turn the machine power off.
2. Remove the front cover and the solution fill lid.
3. Fill the solution tank with clean water. (See the Technical Specifications chart for exact capacity). The water must not be hotter than 140° F (60°C) to prevent damage to the tank.
4. Replace the solution fill lid and front cover.

Deluxe

1. Turn the machine power off.
2. Remove the front cover and the solution fill lid.
3. Fill the "A" tank with either encapsulating interim carpet cleaning or pre-spray chemical.
4. Fill the "B" tank with extraction chemical or the finishing rinse.
5. Turn machine power on.
6. Prime chemical system by holding the prime switch to the "A" position for 30 seconds then holding the prime switch to the "B" position for 30 seconds. If using only one chemical tank, prime only that system.

⚠WARNING:

Flammable materials can cause an explosion or fire. Do not use flammable materials in the tanks.

⚠ AVERTISSEMENT:

Les matières inflammables peuvent provoquer une explosion ou un incendie. Ne pas utiliser de matériaux inflammables dans les réservoirs.

Normal Scrubbing

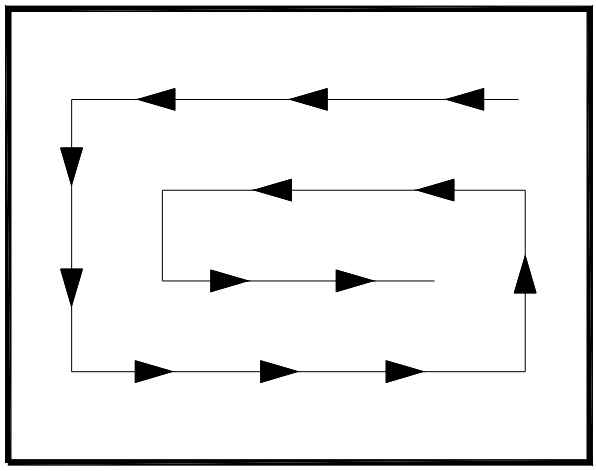
Plan the scrubbing pattern in advance.

For efficient operation, the runs should be the longest possible without turning, stopping, or raising or lowering scrub deck. The longest track is around the perimeter of the area to be cleaned and a collapsing rectangle pattern is most efficient.

In order to achieve the best possible results, the area which is to be cleaned, should be vacuumed before scrubbing. Large debris, strings and wire must be removed to prevent being caught in brushes.

If the machine is allowed to stand in neutral with the scrub deck down for more than 2 seconds, the solutions flow stops and brush motor stops. When forward travel is resumed, the solution flow and the scrub brush motor will continue. Overlap the brush path and avoid transporting over previously cleaned areas.

Recommended Scrubbing Path:



To Begin Scrubbing

⚠WARNING:

When operating the machine around people, pay close attention for unexpected movement. Use extra caution around children.

⚠ AVERTISSEMENT:

Lorsque vous utilisez la machine en présence de gens, portez une attention particulière aux mouvements inattendus. Soyez plus prudent, surtout en présence d'enfants.

1. Turn machine power on.
2. Position rotary switch to the position matching the process to be preformed, and the chemical that was added to the solution tank or chemical tank (Deluxe), either interim or interim/pre-spray (Deluxe) or extraction/cleaning.
3. Check position of reverse button and the position speed control knob so that the machine is set to travel in the direction and the speed intended.
4. Drive machine forward by pressing either throttle switch to begin scrubbing.

To Stop Scrubbing

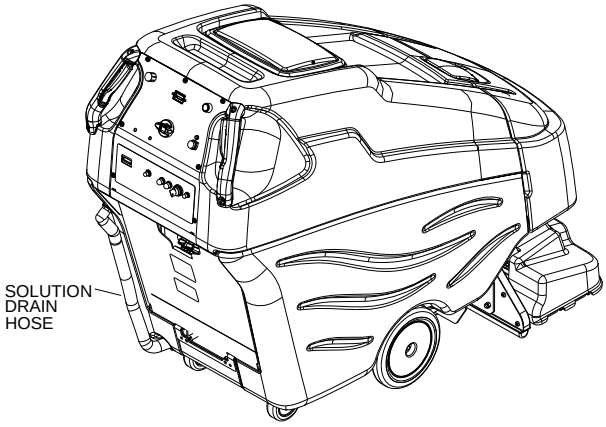
1. While scrubbing turn off the pump switch to stop spraying solution. Continue to scrub and recover the solution for an additional pass.
2. Allow the throttle switches to return to neutral.
3. Rotate the selector switch to the accessory position so that the vacuum motor continues to run and evacuate the system. This will also raise the deck and vacuum shoes.
4. Turn the rotary switch to the off position by rotating the selector switch clockwise. Turn machine power off.

Deluxe

1. While scrubbing turn off the pump switch to stop spraying solution. Continue to scrub and recover the solution for an additional pass.
2. Allow the throttle switches to return to neutral.
3. Rotate the selector switch to the accessory position so that the vacuum motor continues to run and evacuate the system. This will also raise the deck and vacuum shoes.
4. Turn the rotary switch to the off position by rotating the selector switch clockwise. Turn machine power off.

FOR SAFETY: **Before leaving or servicing machine: stop on level surface, turn off machine and remove key.**

FOR SAFETY: **When using machine, go slow on inclines and slippery services.**



Emptying And Cleaning Solution Tank

1. Park the machine next to a floor drain. Drain hose is at the rear of the machine.
2. Turn the machine power off.
3. Remove the top of the hose from the barb mount and lower hose in direction of the drain. Do not stand in front of end of hose. Solution will come out with force.
4. Remove the front cover and solution fill cover.
5. Flush the solution tank out with clean water and run several gallons of clean water through both spray jet systems. Do not use water hotter than 140°F (60°C) to clean tank or damage may occur.
6. Replace the drain hose to the barbed fitting.
7. If machine is to be stored, leave the solution fill cover off.

Emptying And Cleaning Chemical Tanks And System (Deluxe)

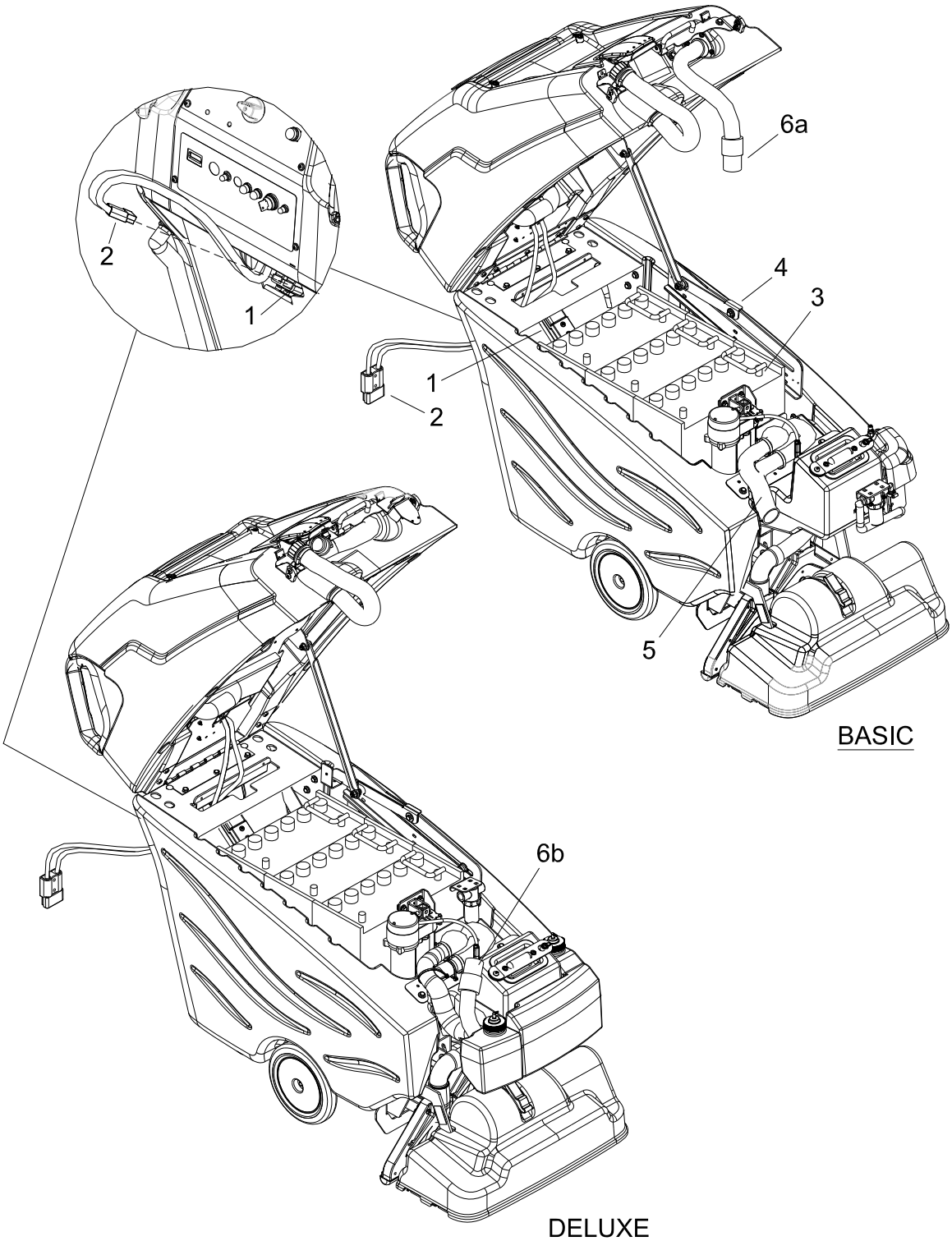
1. Turn off machine and remove front cover.
2. Park the machine next to a floor drain. The tanks are located at the front of the machine.
3. Remove the cap and straw from each chemical bottle and install the closed caps.
4. Remove the tanks by lifting off the solution fill tower.
5. The chemical can remain in the tank or be disposed of properly. Remove one cap at a time and properly dispose of chemical. Rinse tanks with clean water.
6. Rinse the chemical system by putting the straws and caps in clean water. Push the prime/flush switch for 30 seconds in each direction, "A" and "B".

Emptying And Cleaning Recovery Tank

1. Park the machine next to a floor drain. Drain hose is at the front of the machine.
2. Turn the machine power off.
3. Remove front cover. Remove hose assembly from mounting hook. Place the end of the hose at the drain and slowly remove the cap. Do not stand in front of hose end. Soiled solution will come out with force.
4. Remove dome lid.
5. Flush the recovery tank out with clean water. Do not use water hotter than 140°F (60°C) to clean tank or damage may occur.
6. Replace the drain hose cap and place hose back on hook. Replace front cover.
7. If machine is to be stored, leave the recovery dome off.

Service Schedule

Maintenance	Before Each Work Period	After Each Work Period	50 HRS	100HRS	200HRS
Check water level of batteries after charging; add distilled water if necessary.	*				
Check brushes for proper installation.	*				
Check for securely attached drain hose, plug and cap.					
Check that solution fill lid seals tightly	*				
Visually check for damaged or worn tires.	*				
Check all throttle, direction and speed controls for proper operation.	*				
Observe spray pattern and clean jets if necessary.	*				
Prime chemical system for 30 seconds for each chemical.	*				
Clean brushes and check wear.		*			
Remove bearing cap from end of brush. Clean bearing and cap.		*			
Clean underside of scrub deck.		*			
Clean out solution tank.		*			
Clean out recovery tank.		*			
Clean and inspect solution filter strainer.		*			
Store with solution fill lid and recovery dome off tanks to allow tanks to dry.		*			
Clean outside of tank, check for damage.		*			
Charge batteries.		*			
Flush chemical system		*			
Clean off top of batteries.			*		
Check battery cells with hydrometer.			*		
Check battery connections are tight.			*		
Clean battery cases and battery compartment.				*	
Grease appropriate zerks (grease fittings).				*	
Clean pivot points on scrub deck.					*
Check all motors for carbon brush wear.					*
Check motor commutators.					*



1. Battery Connector
2. Battery Connector
3. Batteries
4. Prop Rod and Catch
5. "Y" Tube

6a. Recovery Hose - Basic

6b. Recovery Hose - Deluxe

Batteries (Wet Cell Only)

The batteries provide the power to operate the machine. The batteries require regular maintenance to keep them operating at peak efficiency.

The machine batteries will hold their charge for long periods of time, but they can only be charged a certain number of times. To get the greatest life from the batteries, charge them when their charge level reaches 25% of a full charge. Use a hydrometer to check the charge level.

Do not allow the batteries to remain in a discharged condition for any length of time. Never expose a discharged battery to temperatures below freezing. Discharged batteries will freeze causing cracked cases. Do not operate the machine if the batteries are in poor condition or if they have a charge level below 25% (specific gravity below 1.155).

Keep all metallic objects off the top of the batteries, as they may cause a short circuit. Replace worn or damaged cables and terminals.

Check the electrolyte level in each battery cell before and after charging the batteries. Never add acid to the batteries, use distilled water. Do not allow water level to fall below the battery plates. Portions of plates exposed to air will be destroyed. Do not overfill. Keep plugs firmly in place at all times.

⚠CAUTION:

When servicing machine, avoid contact with battery acid.

⚠ ATTENTION:

Lors de l'entretien de la machine, évitez tout contact avec l'acide de batterie.

⚠WARNING:

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep covers open when charging.

⚠ AVERTISSEMENT:

Les batteries émettent du gaz hydrogène. Une explosion ou un incendie peut en résulter. Maintenez les étincelles et les flammes nues à l'écart. Gardez les carters ouverts lors du chargement.

⚠WARNING:

Wear eye protection and protective clothing when working with batteries.

⚠ AVERTISSEMENT:

Portez des lunettes de protection et des vêtements de protection lorsque vous travaillez avec des batteries.

⚠WARNING:

Charge batteries in a well ventilated area.

⚠ AVERTISSEMENT:

Chargez les batteries dans un endroit bien ventilé

Battery Maintenance

1. When cleaning the batteries, use a solution of baking soda and water. Do not allow the cleaning fluid to enter the battery cells, electrolyte will be neutralized.
2. Maintain the proper electrolyte level in each battery cell. If a cell should accidentally overflow, clean immediately.
3. Wipe off the top of the batteries at least once a week.
4. Test battery condition with a hydrometer at least once a week.
5. Ensure that all connections are tight and all corrosion removed.
6. Every 4 to 6 months, remove that batteries from the machine and clean the battery cases and battery compartment.

Checking Battery Specific Gravity

Use a hydrometer to check the battery specific gravity.

NOTE: Do not take readings immediately after adding distilled water, if the water and acid are not thoroughly mixed, the reading may not be accurate.

Check the hydrometer readings against this chart.

SPECIFIC GRAVITY @ 80° F (27°C)	BATTERY CONDITION
1.265	100% CHARGED
1.225	75% CHARGED
1.190	50% CHARGED
1.155	25% CHARGED
1.120	DISCHARGED

NOTE: If the readings are taken when the battery electrolyte is any temperature other than 80°F (27°C), the reading must be temperature corrected.

To find the corrected specific gravity reading when the temperature of the battery electrolyte is other than 80°F (27°): Add (+) to the specific gravity reading 0.004 (4 points), for each 10°F (6°C) above 80° (27°C).

Subtract (-) from the specific reading 0.004 (4 points), for each 10°F (6°C) below 80°F (27°C).

Charging Batteries

⚠ CAUTION:

When servicing machine, avoid contact with battery acid.

⚠ ATTENTION:

Lors de l'entretien de la machine, évitez tout contact avec l'acide de batterie.

⚠ WARNING:

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep covers open when charging.

⚠ AVERTISSEMENT:

Les batteries émettent du gaz hydrogène. Une explosion ou un incendie peut en résulter. Maintenez les étincelles et les flammes nues à l'écart. Gardez les carters ouverts lors du chargement.

⚠ WARNING:

Wear eye protection and protective clothing when working with batteries.

⚠ AVERTISSEMENT:

Portez des lunettes de protection et des vêtements de protection lorsque vous travaillez avec des batteries.

⚠ WARNING:

Charge batteries in a well ventilated area.

⚠ AVERTISSEMENT:

Chargez les batteries dans un endroit bien ventilé

Use a 36 volt, 20 amp maximum output DC charger which will automatically shut off when the batteries are fully charged.

1. Empty recovery tank.
2. Stop the machine in a clean, well ventilated area next to the charger.
3. Turn "OFF" machine.

FOR SAFETY: **Before leaving or servicing machine; stop on level surface, turn off machine and remove key.**

4. Unplug the machine from the battery pack. Remove front cover. Disconnect recovery hose from "Y" tube. Raise recovery tank and verify prop rod latch is safely engaged.

⚠ WARNING:

Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away. Keep covers open when charging.

⚠ AVERTISSEMENT:

Les batteries émettent du gaz hydrogène. Une explosion ou un incendie peut en résulter. Maintenez les étincelles et les flammes nues à l'écart. Gardez les carters ouverts lors du chargement.

5. Check the electrolyte level in each battery cell. Before charging, add just enough distilled water to cover the plates. After charging is complete, add just enough distilled water to bring up the level to the indicator ring. If the water level is too high before charging, normal expansion rate of the electrolyte may cause an overflow resulting in a loss of battery acid balance and damage the machine.
6. Replace the battery caps, and leave them in place while charging.
7. Unplug the machine connector from the battery.

FOR SAFETY: **When charging, connect the charger to the batteries before connecting the charger to the AC wall outlet. Never connect the charger to the AC wall outlet first. Hazardous sparks may result.**

8. Plug the charger connector into the battery connector. Connect the charger AC plug to a wall outlet. The charger gauge should indicate that the batteries are charging.
9. When the batteries are fully charged, disconnect the charger from the AC wall outlet, then disconnect the charger from the batteries.
10. Connect the machine to the battery connector.
11. Check the electrolyte level. It should be up to the indicator ring. If necessary, add distilled water.
12. Lower recovery tank by safely disengaging the prop rod latch and slowly lowering. Replace the hose and "Y" tube connection. Replace front cover.

Changing Batteries

Stop the machine in a clean area next to the charger. Turn off machine.

FOR SAFETY: **Before leaving or servicing the machine; stop on level surface, turn off machine and remove key.**

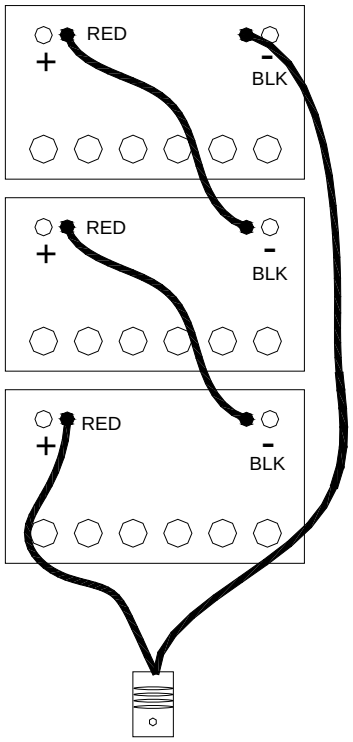
1. Disconnect machine from battery pack.
2. Raise recovery tank and engage prop rod latch.
3. Disconnect main positive lead and secure cable terminals away from batteries.
4. Loosen both terminals on each jumper cable and remove one at a time.
5. Prepare a suitable site to place the batteries.
6. Attach suitable battery lifting device and lift batteries from the machine.

⚠WARNING:

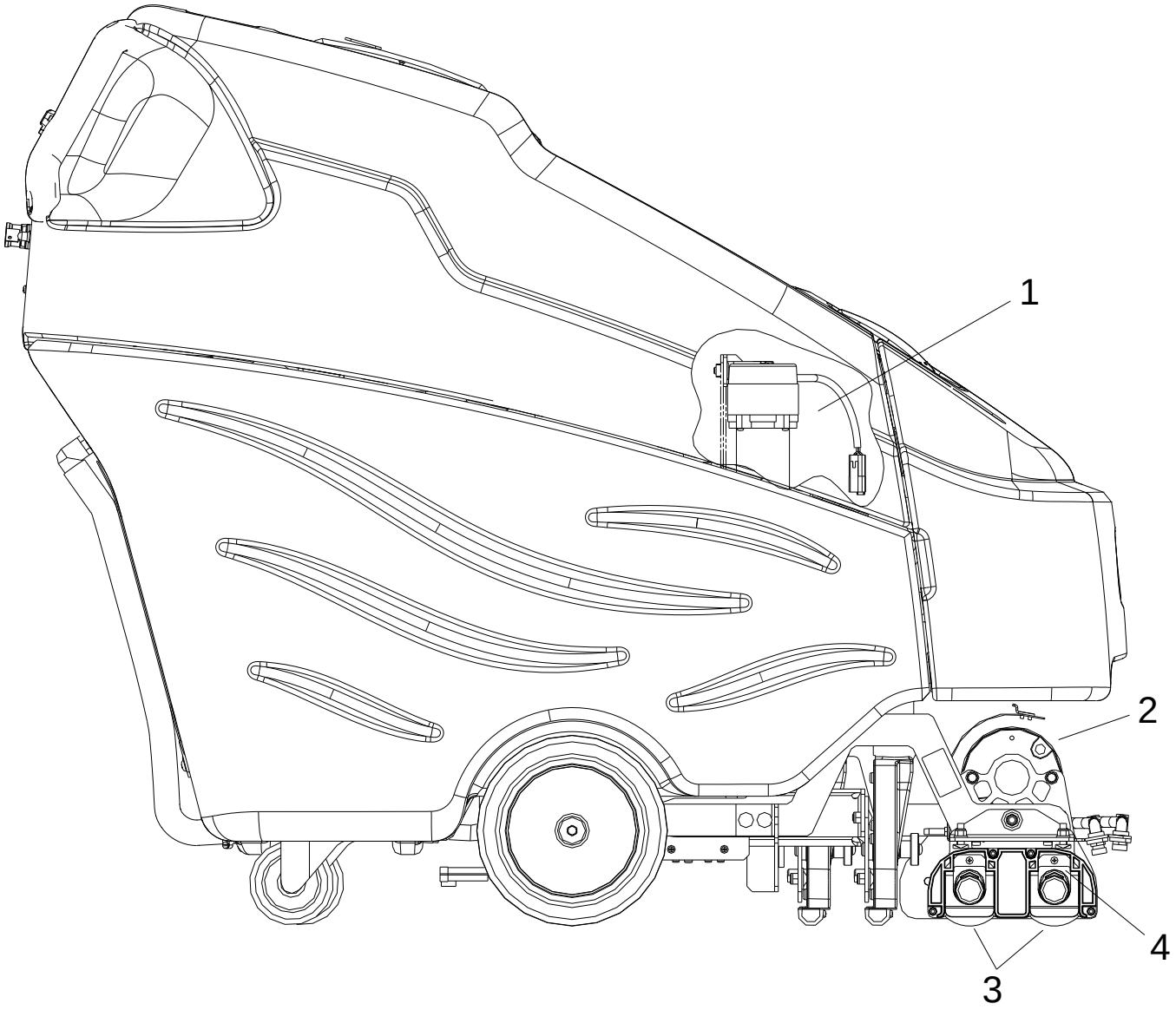
Batteries are a potential environmental hazard. Consult your battery supplier for safe disposal methods.

⚠ AVERTISSEMENT:

Les batteries constituent un danger potentiel pour l'environnement. Consultez le fournisseur de votre batterie pour connaître les méthodes d'élimination sûres.



Rear of Machine



Scrub Deck

1. Scrub deck lift actuator
2. Scrub brush motor
3. Scrub brushes
4. Retaining clip

Scrub Head

The dual cylindrical scrub head is designed to scrub chemical into the carpet. The two counter rotating brushes raise the pile of the carpet, giving it a lush groomed appearance.

Maintenance

Scrub brushes should be exchanged front to back every 50 hours to ensure even wear. Scrub brushes should be replaced as a set when bristle length wears to height of yellow PerformAlert™ bristles

Scrub Brushes

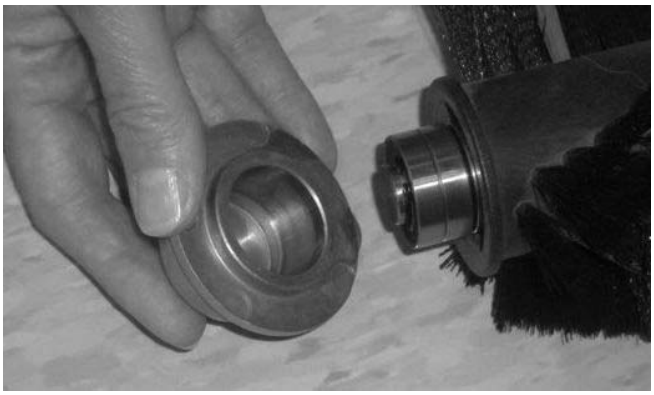
Scrub Brush Removal

The scrub brushes are removed from the right side of the machine.

1. Raise the scrub deck to the storage position.
2. Pull out on the bottom of the retaining clip.
3. The brush assembly and end cap should drop down. Then pull the brush down far enough to clear the bottom of the housing.
4. Pull brush out with a rocking motion to free brush from drive hub.

Bearing Cleaning

1. Remove bearing cap from end of brush.
2. Clean cap and bearings.



Scrub Brush Replacement

1. Lift the drive side of the brush and push it onto drive hub until a positive stop is felt. The brush cannot be installed until the brush is fully seated on the drive hub.
2. Pull out on the bottom of the retaining clip.
3. Line up the end cap with the flats to each side.
4. Slide brush up into the retaining clip until it clicks in place.

Scrub Motor

⚠WARNING:

Do not use a pressure washer to clean around the brush motors. Use tap pressure only.

⚠ AVERTISSEMENT:

N'utilisez pas de nettoyeur haute pression pour nettoyer autour des moteurs des brosses. Utilisez seulement la pression du robinet.

To Replace Scrub Brush Motor

1. With the scrub deck in the lowered position, remove the deck cover and disconnect brush motor wiring connector from harness.
2. Remove the motor and end bracket assembly from the deck.
3. Separate brush motor from end brackets.
4. Reverse to reassemble.

Brush Motor Carbon Brush Replacement

1. Scribe alignment mark on motor barrel to motor cap. Remove two bolts.
2. Remove end cap from motor.

   NOTE: Motors contain two wave washers in cap. Do not lose these.

3. Release brush from spring tension. Remove screw connecting brush wire lead to brush holder. Clean brush holder to insure free movement.
4. Retract spring and install new brush. Install connector screw and lead.
5. When all new brushes are installed. Place all in retracted position, held into brush holder by spring tension.
6. Carefully place end cap onto bearing on motor shaft.

   NOTE: Use care to assure wave washer alignment.

7. With end cap in partially installed position, release all brushes to contact position with motor commutator.

   NOTE: Failure to insure all brushes are released will result in motor failure.

8. Reset end cap and realign with scribe marks on motor barrel. Reinstall the two attach bolts from cap into base.
9. Maintain alignment between motor barrel base and cap.

Actuator Scrub Deck Removal/ Replacement

FOR SAFETY: **Before leaving or servicing machine, stop on a level surface. Turn off machine.**

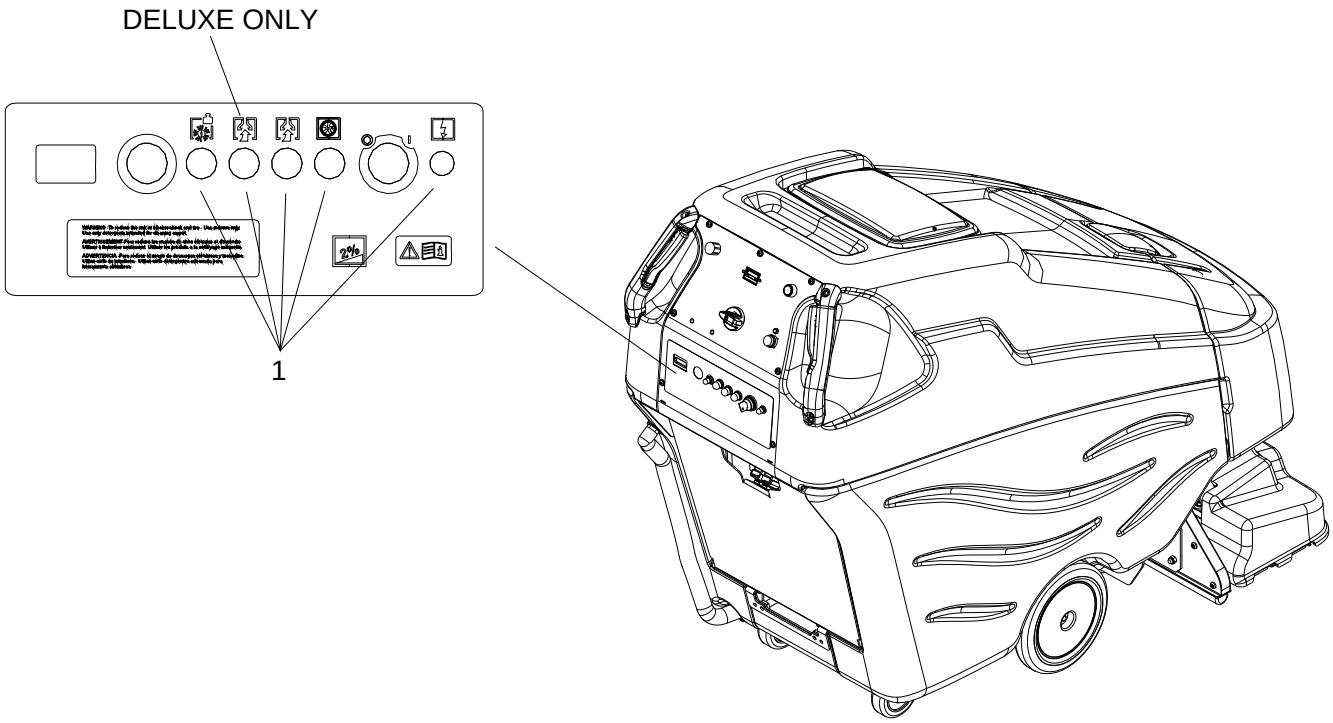
1. Lower scrub deck. Remove the front cover and raise recovery tank.
2. Disconnect electrical connector.
3. Remove the clevis pin retaining the bottom of the actuator.
4. Remove the clevis pin retaining the top of the actuator.
5. Reverse for re-installation.

Scrub Deck Actuator Adjustment

The actuator will need to be adjusted when replaced.

To adjust the actuator:

1. While holding actuator barrel to prevent it from spinning, apply power to the actuator such that it is fully extended. Positive power to white wire, and negative/ground to black. Limit switch within actuator will stop it.
2. With actuator fully extended, attach to the top bracket.
3. At the bottom mount align the mounting hole with the center of the slot, turn the barrel in or out enough to align connection to bracket.
4. Connect actuator electrical plug.
5. Check travel of actuator during operation.



Circuit Protection

1. Circuit Breakers

Circuit breakers interrupt the flow of power in the event of an electrical overload. When a circuit breaker is tripped, reset it by pressing the exposed button. If a circuit breaker continues to trip, the cause of the electrical overload should be found and corrected

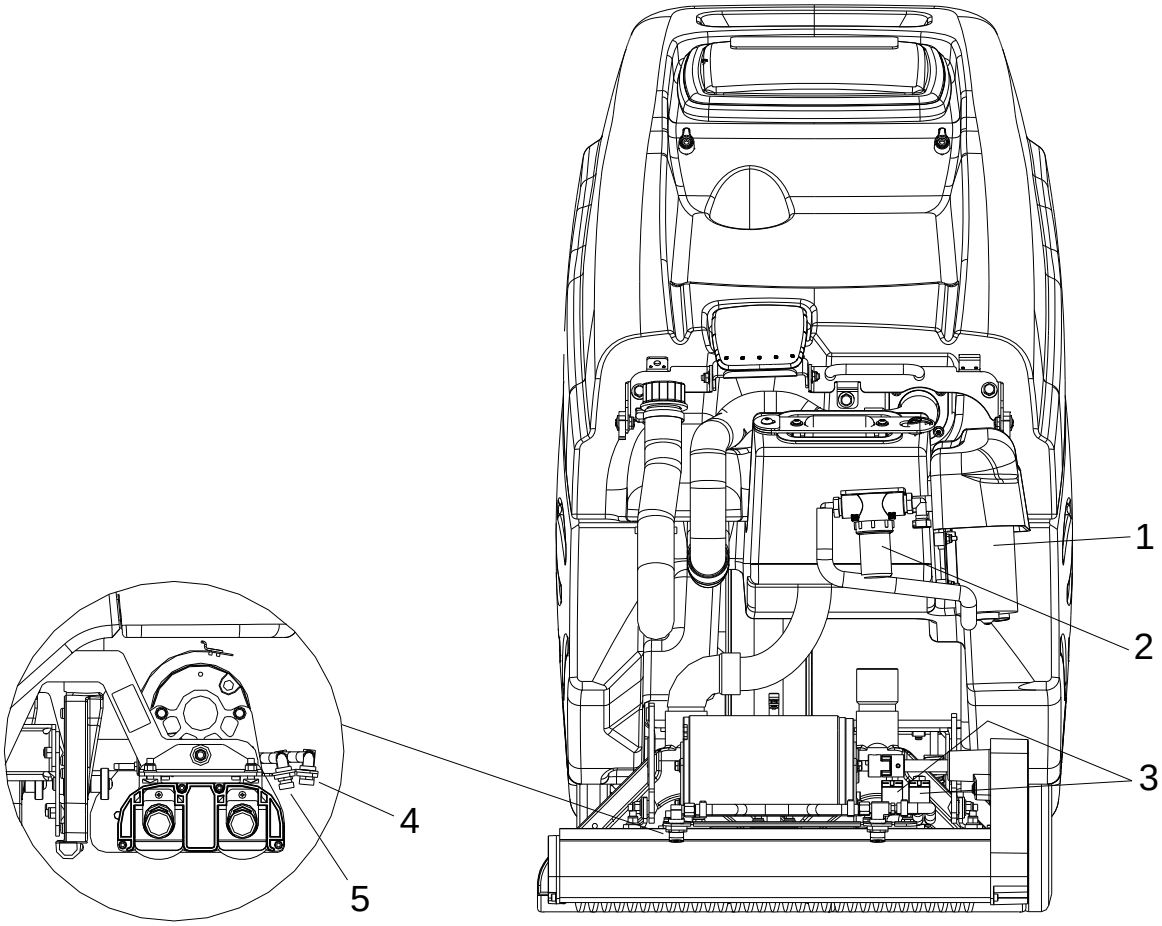
30 Amp. Protects the vacuum motor.

30 Amp. Protects the vacuum motor.

22 Amp. Protects the scrub brush motor.

25 Amp. Protects the propel motor.

3 Amp. Protects the machine controls, pump and actuator.



BASIC

Solution Strainer & Pump-Basic

1. Pump
2. Solution Strainer
3. Solenoid Valves
4. Jets- Interim
5. Jets-Extraction

Solution Strainer

The solution strainer is located on the front of the machine under the front cover. The strainer protects the pump, solenoid valve and jets from debris. If there is little or no solution flow to the ground, check the strainer for debris. Clean the solution strainer. To remove the strainer, turn the bottom part of the strainer counterclockwise until the bottom is separated. Clean out the debris from the wire mesh and the bowl and re-assemble. Make sure the O-ring gasket is in place when re-assembled.

Pump

The pump is located on the front of the machine under the front cover. The pump delivers solution from the tank to the scrub deck.

To repair or replace pump:

1. Remove front cover.
2. Remove hoses connecting the pump.
3. Remove screws that secures pump to mounting plate.

Solenoid Valve

The solenoid valves is mounted on the front of the scrub deck, on left side.

The solenoid valves shuts off solution flow to jets whenever scrubbing stops or in reverse. To repair or replace solenoid valve, remove screws that secure it to deck.

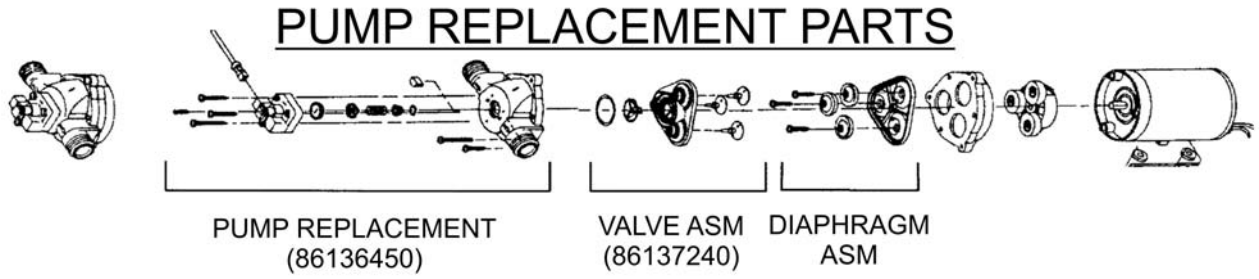
Jets

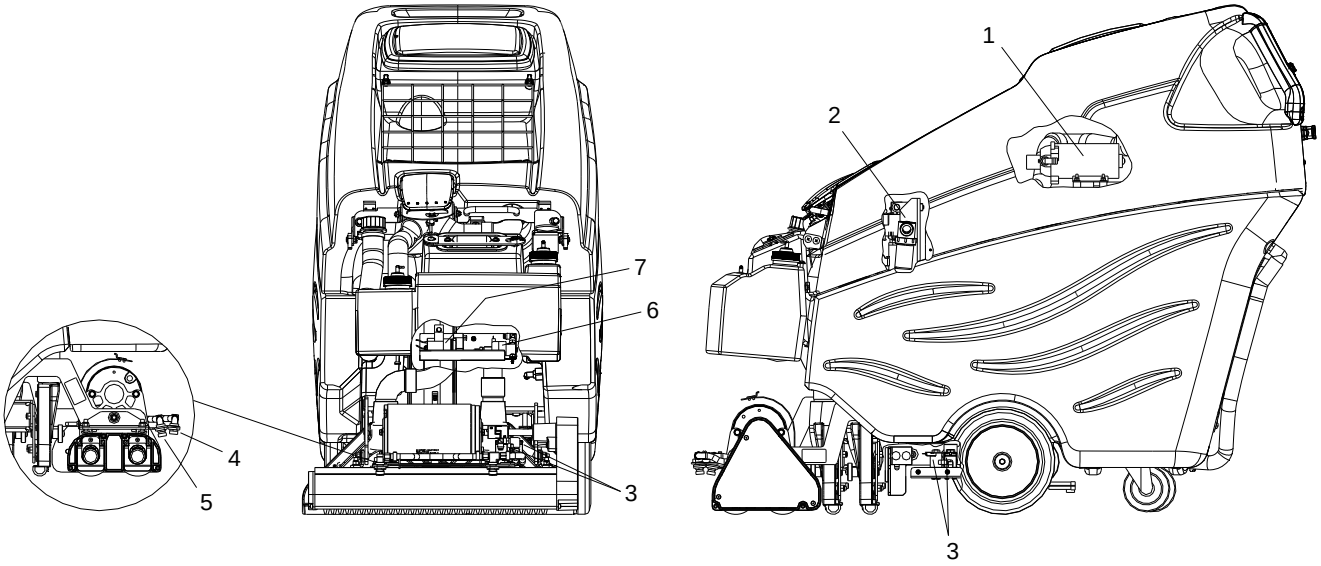
The two sets of jets are located in front of the scrub deck.

The jets spray cleaning solution onto the carpet. The spray pattern should be checked regularly and if jets become clogged they should be cleaned or replaced immediately.

To clean jets:

1. Remove jet from jet body by rotating it counter-clockwise.
2. Blow debris back through orifice if possible. Do not use pointed object to unplug jet. This will damage jet and cause improper spray pattern and solution flow through jets.
3. If jet cannot be cleaned by blowing debris back through its orifice, submerge jet in small container of acetic acid and let soak for up to six hours.
4. After soaking jet, use a soft brush to remove debris and rinse thoroughly.
5. Install jet in jet body by rotating it clockwise firmly into place.
6. For lower flow in extraction "B" other jets are available. (See Accessories page).





Solution Strainer & Pump-Deluxe

1. Pump
2. Solution Strainer
3. Solenoid Valves
4. Jets-Interim
5. Jets-Extraction
6. A-B Chemical Valve
7. Chemical Pump

Pump

The pump is located on underside of the recovery tank. The pump delivers solution from the tank to the scrub deck.

To repair or replace pump:

1. Remove bracket assembly from the bottom side of the recovery tank.
2. Remove hoses connecting the pump.
3. Remove screws that secures pump to mounting plate.

Solution Strainer

The solution strainer is located under the recovery tank. The strainer protects the pump, solenoid valve and jets from debris. If there is little or no solution flow to the ground, check the strainer for debris. Clean the solution strainer. To remove the strainer, turn the bottom part of the strainer counterclockwise until the bottom is separated. Clean out the debris from the wire mesh and the bowl and re-assemble. Make sure the O-ring gasket is in place when re-assembled.

Solenoid Valve

The solenoid valves is mounted on the front of the scrub deck, on left side.

The solenoid valves shuts off solution flow to jets whenever scrubbing stops or in reverse. To repair or replace solenoid valve, remove screws that secure it to deck.

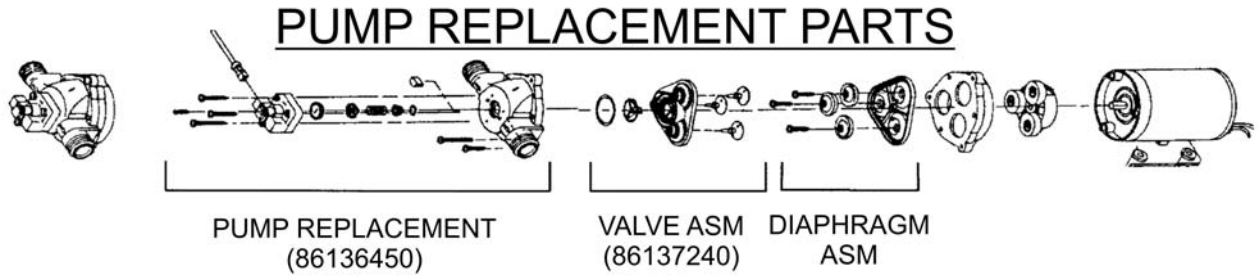
Jets

The two sets of jets are located in front of the scrub deck.

The jets spray cleaning solution onto the carpet. The spray pattern should be checked regularly and if jets become clogged they should be cleaned or replaced immediately.

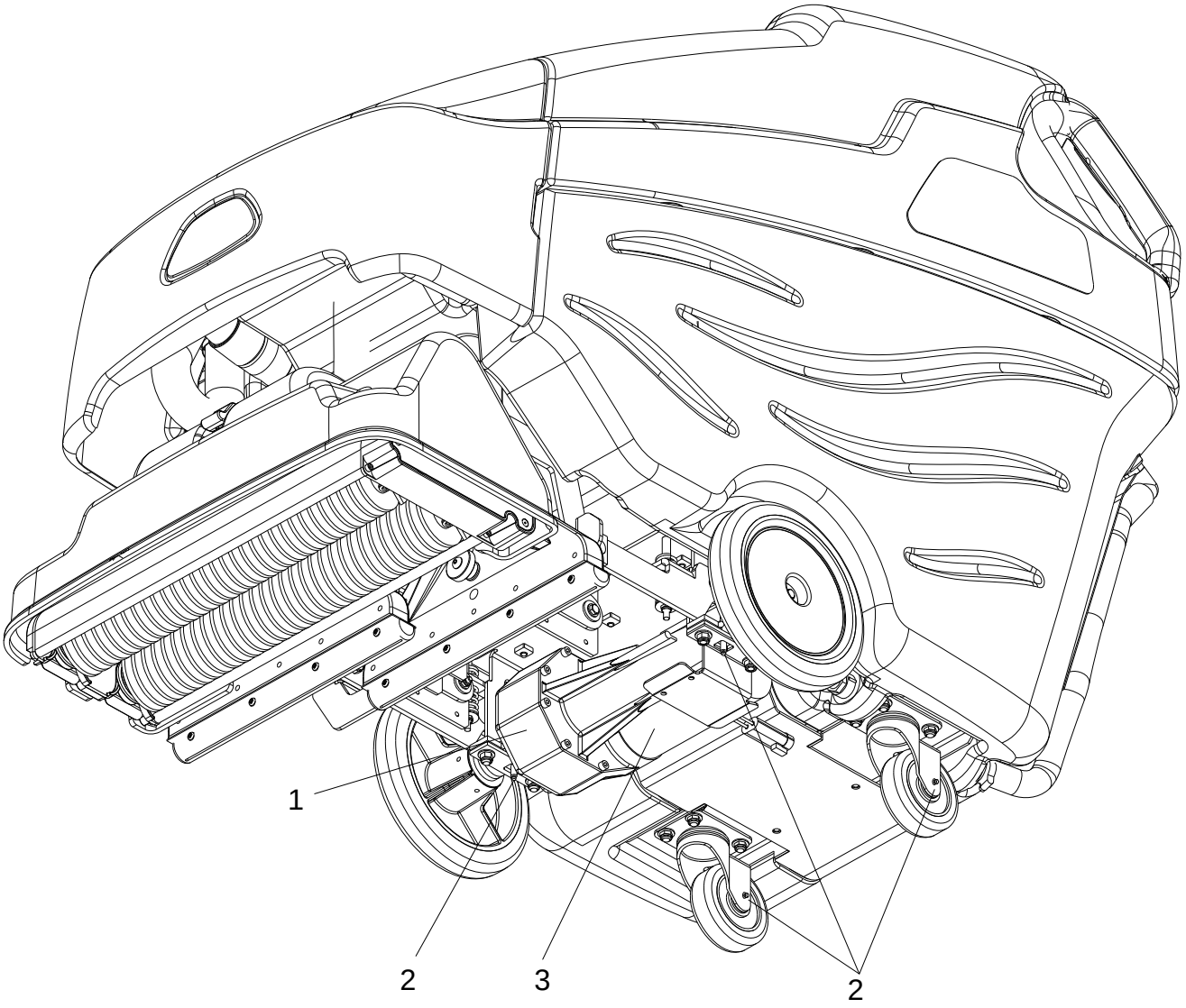
To clean jets:

1. Remove jet from jet body by rotating it counter-clockwise.
2. Blow debris back through orifice if possible. Do not use pointed object to unplug jet. This will damage jet and cause improper spray pattern and solution flow through jets.
3. If jet cannot be cleaned by blowing debris back through its orifice, submerge jet in small container of acetic acid and let soak for up to six hours.
4. After soaking jet, use a soft brush to remove debris and rinse thoroughly.
5. Install jet in jet body by rotating it clockwise firmly into place.
6. For lower flow in extraction "B" other jets are available. (See Accessories page).



A-B Chemical Pump & Chemical Pump

1. The chemical tank "A" holds either encapsulating interim chemical or pre-spray chemical. Tanks should be cleaned weekly. Extra chemical should be stored using the blank cap instead of the straw cap.
2. The chemical tank "B" hold the deep extraction chemical. The tank should be cleaned weekly. Extra chemical should be stored using the blank cap instead of the straw cap.
3. The chemical selector valve switches between the "A" and "B" chemical being pumped through the chemical mixing section and delivered to the solution system, depending on the position of the function switch on the control panel. The selector valve chemical pump and chemical mixing section should be flushed with clean water after each use. Drain water through both the "A" and "B" cap and straws by putting them in water and pressing the "A" and "B" prime/flush switch each way for 30 seconds.



Drive Assembly

1. **Drive Assembly**
2. **Grease Points**
3. **Drive Motor**

Drive Assembly

Drive Motor Carbon Brush Replacement

⚠WARNING:

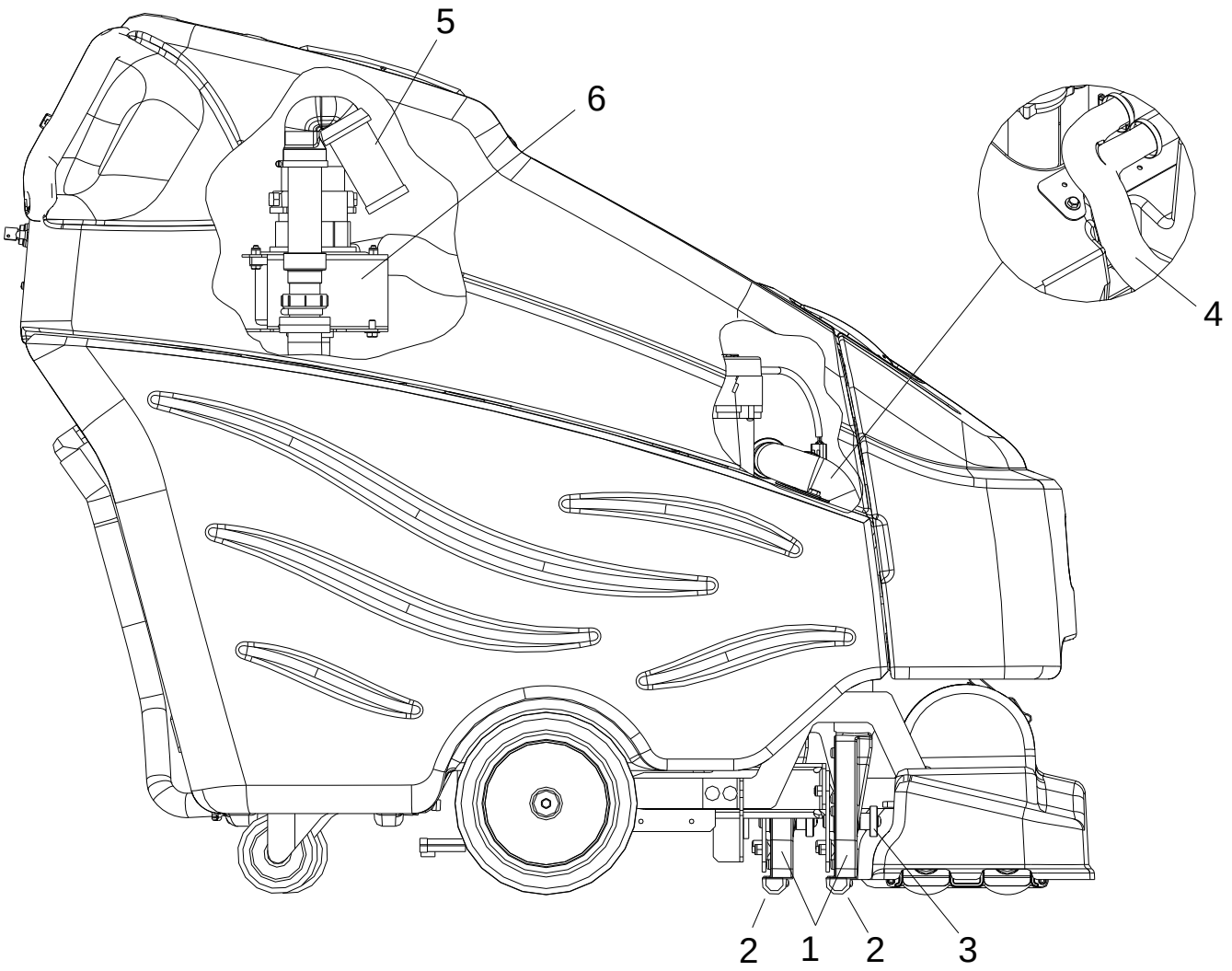
Do not use a pressure washer to clean around the motors. Use tap pressure only.

⚠ AVERTISSEMENT:

N’utilisez pas de nettoyeur haute pression pour nettoyer autour des moteurs des brosses. Utilisez seulement la pression du robinet.

FOR SAFETY: **Before leaving or servicing machine, stop on a level surface, turn off machine and remove key.**

1. Disconnect batteries from machine.
2. Disconnect the electrical connection to the traction motor.
3. Remove brush cap.
4. Release brush from spring tension. Remove screw connecting brush wire lead to brush holder. Clean brush holder to insure free movement.
5. Install new brush and reinstall connecting screw and lead.
6. When all new brushes are installed. Place all in retracted position, held into brush holder by spring tension.
7. Carefully replace brush cap.



Vacuum

1. **Vacuum Shoes**
2. **Vacuum Glides**
3. **Vacuum Shoe Retainer Knobs**
4. **"Y" Tube**
5. **Float Ball And Screen**
6. **Vacuum Motor**

Vacuum Shoes

The dual offset vacuum shoes are designed to extract soiled solution from the carpet. The plastic vacuum shoe glides minimize wear to flooring.

Maintenance

The vacuum shoes should be removed and cleaned daily to ensure maximum recovery.

Vacuum Shoe Removal

1. Unscrew retainer knob from right side vacuum shoe.
2. Pull vacuum shoe forward until it is free from pivot pin.
3. Remove vacuum hose from top of vacuum shoe
4. Repeat to remove left side vacuum shoe.
5. Inspect or repair as necessary and reinstall.

To Clean Vacuum Shoes

1. With the vacuum shoes in the raised position, turn key switch "off".
2. Remove vacuum shoes.
3. Flush vacuum shoes from top with water. If necessary, clean blockage from narrow opening with a scraper or similar device.
4. Vacuum shoe glides may be removed for cleaning (or replaced) by removing the three pins that secure them to metal vacuum shoes.

Recovery Tank Float Shut-Off

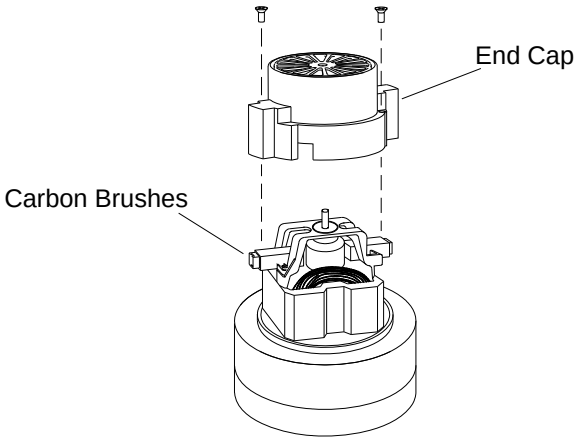
When water is no longer being vacuumed from the floor and the vacuum fan is operating, the ball float has engaged. The vacuum motors will not vacuum water with recovery tank full. The recovery tank must be drained.

1. The float shut-off screen can be cleaned in or out of the machine.
2. To clean the float shut-off while it is inside the machine wipe material off screen then rinse. Check that the ball is also clean and moves freely.
3. To remove the float shut-off, grasp the elbow with one hand tilt and pull the float screen assembly to pull it off the elbow.
4. To install, place one hand on the elbow, and then tilt and push the float screen assembly over the elbow.

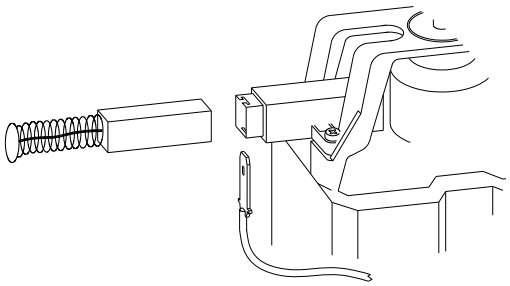
To Repair Or Replace Vacuum Motor(s)

1. Remove the front cover, drain the recovery tank.
2. Raise the recovery tank and safely engage the prop rod latch.
3. Disconnect electrical connector from the vacuum motor(s) and connecting hoses.
4. Unbolt the bracket and vacuum motor assembly and remove from tank.
5. Remove the vacuum motor from the bracket.
6. Reverse steps to install. Make sure the gaskets fit and seal properly as you reassemble.

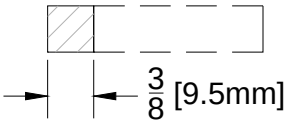
Vacuum Motor Carbon Brushes



If armature commutator is grooved, extremely pitted or not concentric, the motor will need to be replaced or sent to a qualified service center.



Important:
These brushes wear quicker as the length shortens due to increased heat. Spring inside brush housing will damage motor if brushes are allowed to wear away completely.



Periodically check the length of the carbon brushes. Replace both carbon brushes when either is less than 3/8" (9.5mm) long.

Transporting Machine

Pushing Machine

The machine may be pushed for short distances at speeds not to exceed 5 mph. Be careful to avoid damaging machine. The machine may be pushed by hand from the rear.

NOTE: To avoid damage caused by regenerative voltage, disconnect traction motor before towing or pushing machine.

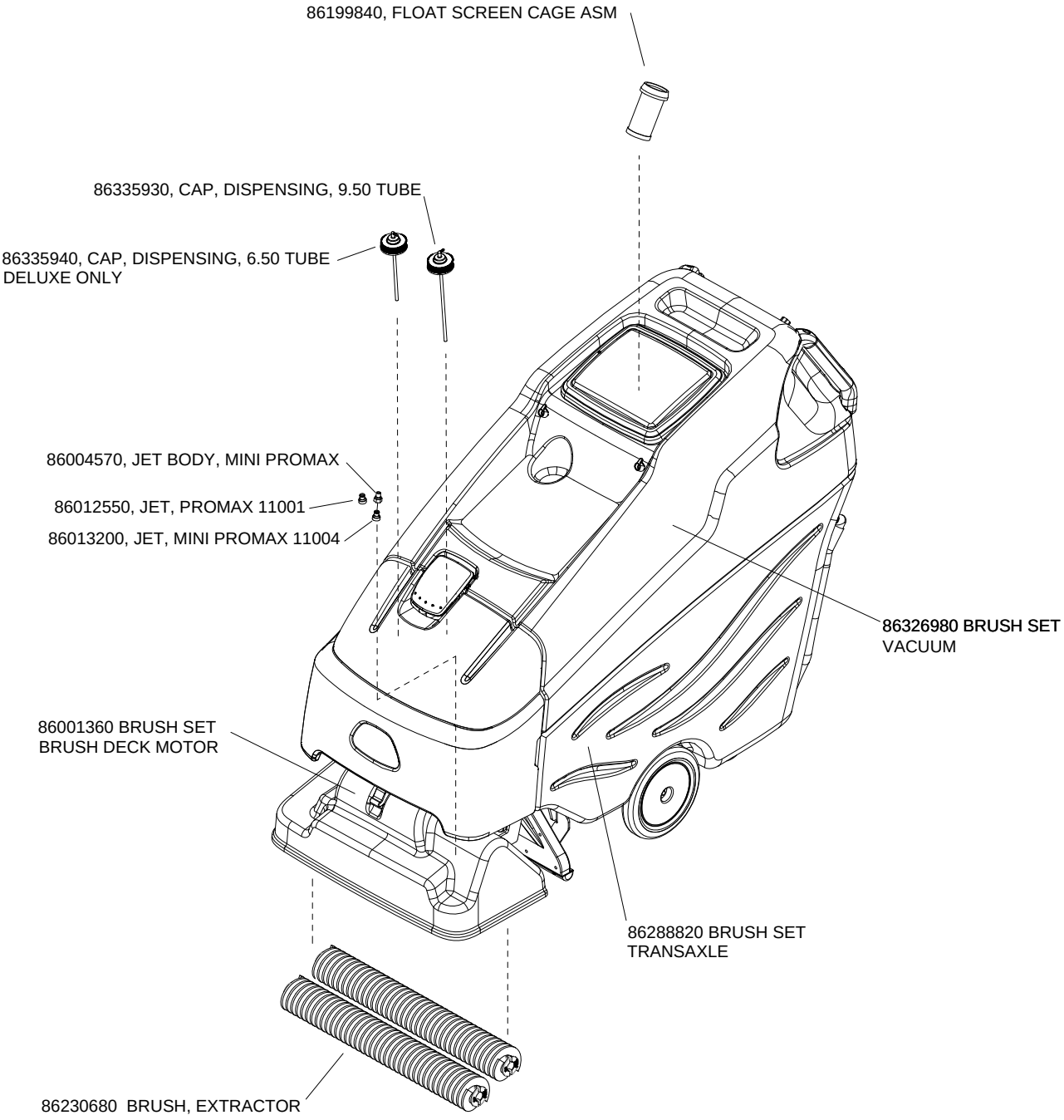
Preparation For Loading /Unloading Trailer

Before loading or unloading machine from trailer, remove vacuum shoes to eliminate interference. Scrub head must be in the up position before loading.

NOTE: When transporting the machine on a trailer or in a truck, in addition to using tie-downs, be sure to block the tires to prevent the machine from rolling.

Machine Troubleshooting

PROBLEM	CAUSE	SOLUTION
No power to machine	Battery disconnected	Check all battery cable connections
	Battery cables corroded	Clean connections
	Faulty key switch	Replace switch
Little or no propel	Low battery charge	Charge batteries
	Machine turned on with propel trigger not in neutral position	Allow pedal to return to neutral. Restart
	Tripped circuit breaker	Reset circuit breaker and check brush
	Controller overheated	Allow cool down period
	Loose motor connection	Check wires and connections from controller to motor
	Faulty throttle circuit or potentiometer	Check wires and connections from throttle to controller and potentiometer resistance
	Faulty brake circuit	Check wires connections
Machine does not change speeds	Faulty speed control circuit or potentiometer	Check wires, connections and pot
Forward speed only Reverse speed only	Faulty forward/reverse switch	Replace switch
Poor scrubbing performance	Debris caught in scrub brushes	Remove debris
	Low scrub brush down pressure	Check brush wear
	Low battery charge	Charge batteries
Little or no solution flow to the floor	Solution tank empty	Fill solution tank
	Solution pump turned off	Turn on pump
	Solution strainer plugged	Clean solution strainer
	Solution system plumbing obstructed	Clear obstruction from plumbing
	Pump obstructed	Clean or replace pump
	Solution solenoid valve obstructed or stuck	Clean or replace valve
	Jet(s) obstructed	Clean or replace jet(s)
	Faulty pump circuit or pump	Check wiring, connections, and pump.
	Faulty solenoid	Check solenoid valve
Brush motors do not run, or run slowly	Circuit breaker(s) tripped	Reset circuit beaker(s) and check brush pressure.
	Low battery charge	Charge battery
	Fault brush circuit or motor	Check wires, connections and motor
	Worn brush motor brushes	Replace brushes, check commutator
Scrub deck will not go down/up	Actuator circuit breaker tripped	Reset breaker
	Faulty actuator circuit or actuator	Check wires, connections and actuator
No chemical flow (Deluxe)	Tank(s) empty	Fill tanks and prime chemicals
	Chemical pump not primed	Prime chemical pump
	Chemical system obstruction	Rinse system with water


86199840, FLOAT SCREEN CAGE ASM
86335930, CAP, DISPENSING, 9.50 TUBE
86335940, CAP, DISPENSING, 6.50 TUBE
DELUXE ONLY
86004570, JET BODY, MINI PROMAX
86012550, JET, PROMAX 11001
86013200, JET, MINI PROMAX 11004
86326980 BRUSH SET
VACUUM
86001360 BRUSH SET
BRUSH DECK MOTOR
86288820 BRUSH SET
TRANSAXLE
86230680 BRUSH, EXTRACTOR